NEC

Projector

PH1201QL

User's Manual

INSTALLATION AND QUICK-START GUIDE

CONNECTION GUIDE

OPERATING GUIDE

REFERENCE GUIDE

Model No. NP-PH1201QL

About This Document

Follow the instructions in this manual carefully to ensure safe and long-lasting use of the projector.

Symbols used in this manual

Many pages in this document have a dedicated area for notes. The information in that area is accompanied by the following symbols:

WARNING: this symbol indicates that there is a danger of physical injury to yourself and/or damage to the equipment unless the instructions are closely followed.

ELECTRICAL WARNING: this symbol indicates that there is a danger of electrical shock unless the instructions are closely followed.

LASER WARNING: this symbol indicates that there is a potential hazard of eye exposure to laser radiation unless the instructions are closely followed.

NOTE: this symbol indicates that there is some important information that you should read.

Product revision

Because we at NEC continually strive to improve our products, we may change specifications and designs, and add new features without prior notice.

Legal notice

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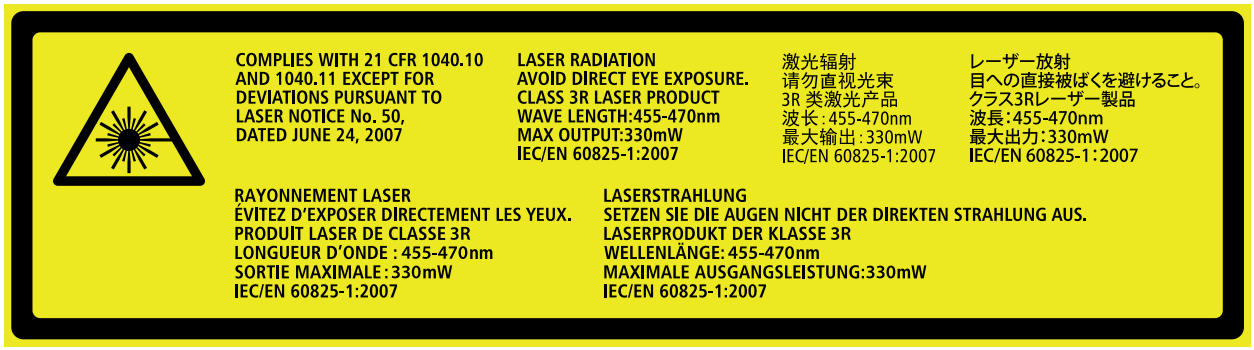
NEC disclaims any proprietary interest in trademarks and trade names other than its own.

Notes

Laser Information



Caution - use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes

Introduction

Your projector has the following key features:

- 4K resolution up to 60 fps.
- Full 4K 3D display capability.
- Scaling 2K resolution to 4K resolution.
- Quad 3G-SDI interface for 4K 60fps.
- Control via LAN and RS232.
- Motorised lens mount.

A serial number is located on the product label. Record it here:

Notes

CONTENTS

INSTALLATION AND QUICK-START GUIDE 1

WHAT'S IN THE BOX? 3

POWER SUPPLY 4

AC power work specifications 4

AC power supply equipment 4

AC power supply cable for the projector 5

Connector 6

Connecting the power supply 7

PROJECTOR OVERVIEW 8

Front and rear views 8

Control panel 9

Control panel button indicators 10

Status indicators 11

POSITIONING THE SCREEN AND PROJECTOR 12

Tilting restrictions 13

Pitch 13

Roll 13

LENS ASSEMBLY AND FITTING 14

Assembling the lens 14

Inserting a new lens 16

Removing the lens 19

CLEANING AND REPLACING THE FILTERS 21

General notes 21

Cleaning the air filters 21

Replacing the air filters 21

Rear filters 22

Front filter 24

Reset the air filter usage time 26

OPERATING THE PROJECTOR 27

Switching the projector on 27

Switching the projector off 28

Selecting a title or test pattern 29

Selecting a title 29

Selecting a test pattern 30

Adjusting the lens 31

Adjusting the brightness 32

CONNECTION GUIDE 33

SIGNAL INPUTS 35

SDI and DVI inputs 35

3D Sync 36

Indicators on the terminal panel 37

EDID on the DVI inputs 38

Using HDMI/DVI/DisplayPort switchers with the projector 38

CONTROL CONNECTIONS 39

CONTENTS (continued)

OPERATING GUIDE 41

USING THE CONTROL PANEL 43
LCD display overview 43
In STANDBY mode 43
In operation 43
When showing menus 44
Locking and unlocking the control panel 45
Working with menus 46
Entering alphanumeric values 46

USING THE PROJECTOR 47
Title Select menu 47
Selecting a test pattern 47
Configuration menu 48
Light Setup 48
Lens Control 48
Reset 48
Information menu 49
Light Output 49
Preset Button 49
Usage 49
Error Code 49
Version 50
IP Address 51
Setup Date 51
Option Status 51

REFERENCE GUIDE 53

THE DMD™ 55
CHOOSING A LENS 57
SCREEN REQUIREMENTS 58
Fitting the image to the DMD™ 58
Diagonal screen sizes 59
Fitting the image to the screen 60
Positioning the screen and projector 61

POSITIONING THE IMAGE 62
ASPECT RATIOS EXPLAINED 64
APPENDIX A: LENS PART NUMBERS 65
APPENDIX B: SUPPORTED SIGNAL INPUT MODES 66
Supported 4K signals - Option board 66
Screen allocation of Option board input signals 67

APPENDIX C: MENU MAP 68
APPENDIX D: WIRING DETAILS 70
Signal inputs - option board 70
DVI 70
3G-SDI In 71
Control connections 72
LAN 72
RS232 72
3D Sync IN and 3D Sync OUT 72

CONTENTS (continued)

TECHNICAL SPECIFICATIONS **73**
- Models **73**
- Inputs and outputs **74**
- Bandwidth **74**
- Remote control and keypad **74**
- Automation control **74**
- Color temperature **74**
- Lenses **75**
- Lens mount **75**
- Mechanical mounting **75**
- Orientation **75**
- Electrical and physical specifications **76**
- Safety & EMC regulations **76**
- CAD drawings **77**

NEC CONTACTS **78**

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NEC

Projector

PH1201QL

Installation and Quick-Start Guide

Model No. NP-PH1201QL

IN THIS GUIDE

What's In The Box? 3

Power Supply 4

AC power work specifications 4

AC power supply equipment 4

AC power supply cable for the projector 5

Connector 6

Connecting the power supply 7

Projector Overview 8

Front and rear views 8

Control panel 9

Control panel button indicators 10

Status indicators 11

Positioning The Screen And Projector 12

Tilting restrictions 13

Pitch 13

Roll 13

Lens Assembly And Fitting 14

Assembling the lens 14

Inserting a new lens 16

Removing the lens 19

Cleaning And Replacing The Filters 21

General notes 21

Cleaning the air filters 21

Replacing the air filters 21

Rear filters 22

Front filter 24

Reset the air filter usage time 26

Operating The Projector 27

Switching the projector on 27

Switching the projector off 28

Selecting a title or test pattern 29

Selecting a title 29

Selecting a test pattern 30

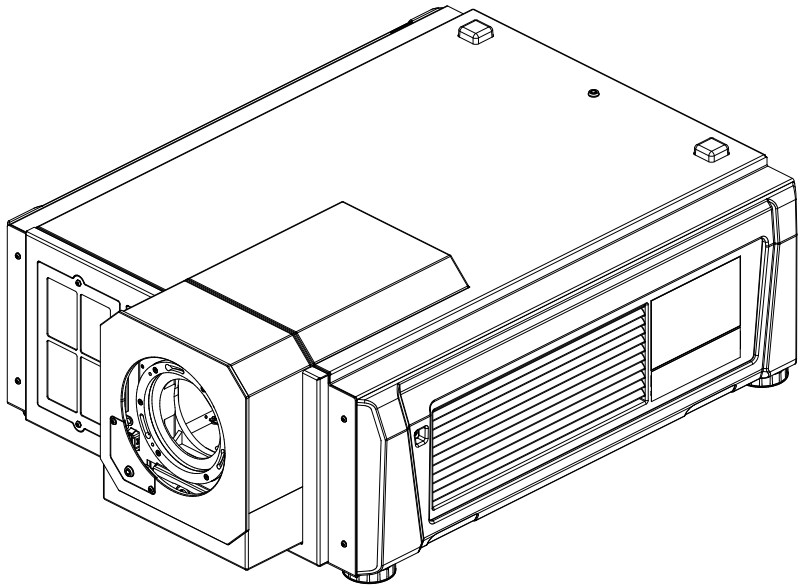
Adjusting the lens 31

Adjusting the brightness 32

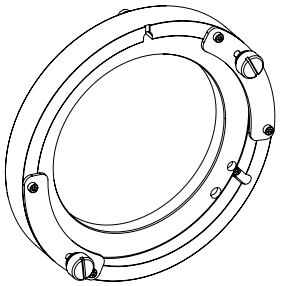
What's In The Box?

Make sure your box contains everything listed. If any pieces are missing, contact your dealer.

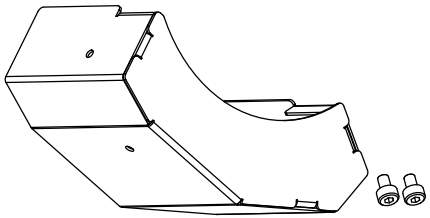
Please save the original box and packing materials if you ever need to ship your projector.



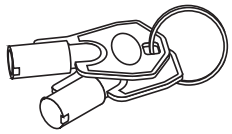
NP-PH1201QL projector (without lens) x 1



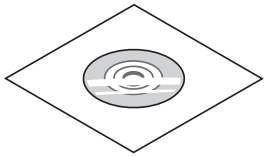
lens holder x 1



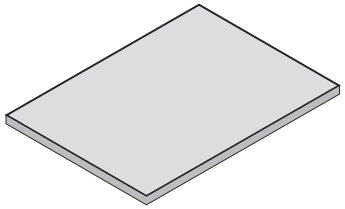
lens gearbox cover x 1
(incl. M2 socket head screws x 2)



service keys x 2



User Manual CD x 1



Important Information x 1

Notes

Power Supply

The power cable is not included with the projector. Refer to the ***AC power work specifications*** section below and provide the necessary power cable.

AC power work specifications

AC power supply equipment

Do not use any voltage other than those shown below for the AC power supply connected to the projector:

- 200–240V AC, single phase, power, 50/60Hz

Notes

Carefully read the contents described in this section before connection and connect the cables according to the proper procedure. Inappropriate handling may cause fatal, serious or other bodily injuries due to fire or electric shock.

Before connecting the power cables, check that the main power switch of the projector is turned off. Implement the connection with AC power shut off.

Be sure to ground the equipment to ensure safety. Use a power cable that meets the standards and power supply voltage of the country where you are using the projector and always connect the equipment to the ground. If the ground is not connected, it may cause electrical shocks.

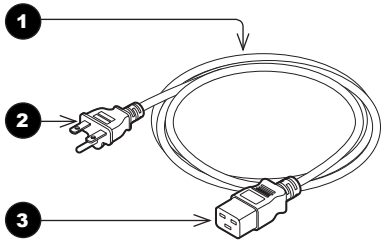
When connecting the power cable plugs to the AC IN and the electrical outlet, securely insert the plugs all the way in. If the connection between the power cable plug and the electrical outlet is loose, the plug area may generate heat, causing burns and accidents.

Users in North America:
Use a power cable no longer than 4.5 m / 14.76 ft according to National Electrical Code.

AC power supply cable for the projector

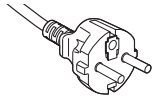
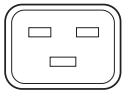
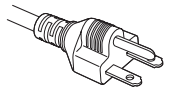
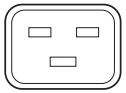
The projector is equipped with an IEC60320 C20 inlet to connect an AC power supply cable. Use an IEC60320 C19 compliant AC power cable connector and ensure that the connector meets the following current capacity specifications.

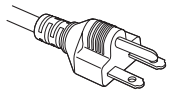
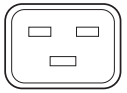
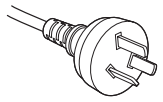
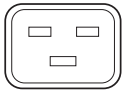
Power supply voltage	Projector input current	Power cable current capacity
AC 200-240 V	8.2 A	250 V 15 A or higher



1. **Cable**
2. **Plug**
3. **Connector**

Furthermore, use cables, plugs and connectors that are suitable for the regulations of the country of installation, as shown in the following table.

Germany			Japan		
Plug: CEE7	Cable: H05VV-F 3G1.5	Connector: IEC 320 C19	Plug: JIS C 8303	Cable: VCTF 3 x 2.0mm	Connector: IEC 320 C19
					

USA			China		
Plug: NEMA 6-15P	Cable: SJT 3 x AWG 14	Connector: IEC 320 C19	Plug: GB2099	Cable: RVV 300/500	Connector: GB17465.1
					

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Before connecting the power cables, check that the main power switch of the projector is turned off. Implement the connection with AC power shut off.

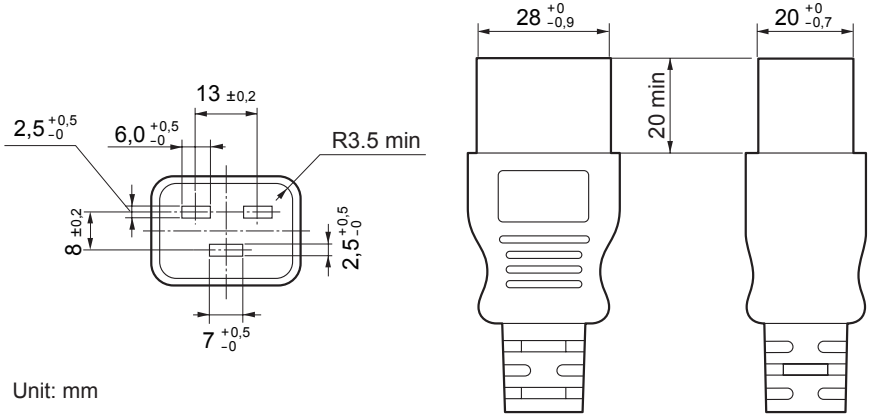
Be sure to ground the equipment to ensure safety. Use a power cable that meets the standards and power supply voltage of the country where you are using the projector and always connect the equipment to the ground. If the ground is not connected, it may cause electrical shocks.

When connecting the power cable plugs to the AC IN and the electrical outlet, securely insert the plugs all the way in. If the connection between the power cable plug and the electrical outlet is loose, the plug area may generate heat, causing burns and accidents.

Users in North America:
Use a power cable no longer than 4.5 m / 14.76 ft according to National Electrical Code.

Connector

Dimensions of the connector of the power cable are shown below.



Unit: mm

Notes

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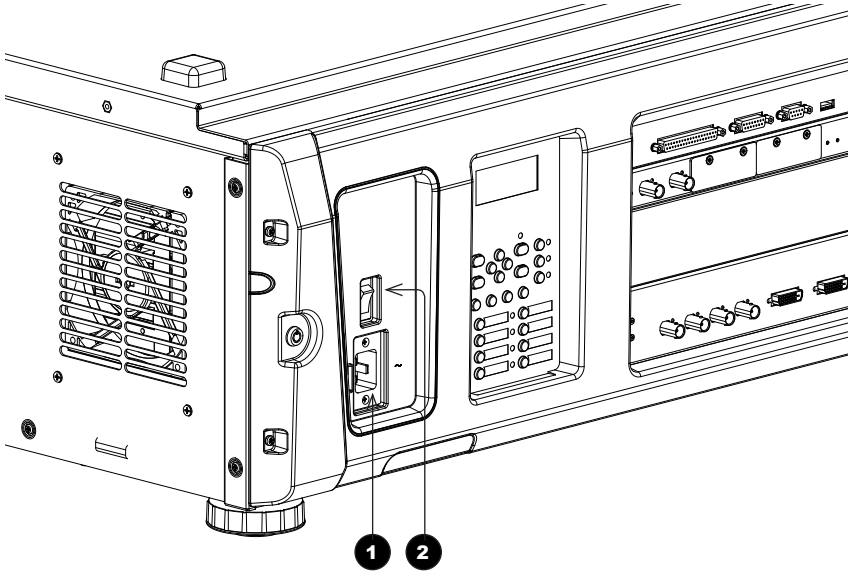
Use a power cable no longer than 4.5 m / 14.76 ft according to National Electrical Code.

Connecting the power supply

When the projector is viewed from the back, the ***AC mains inlet*** 1 is located on the right hand side, toward the rear.

Make sure the ***power switch*** 2 above the inlet is in the OFF position, then push the mains connector in firmly.



Notes

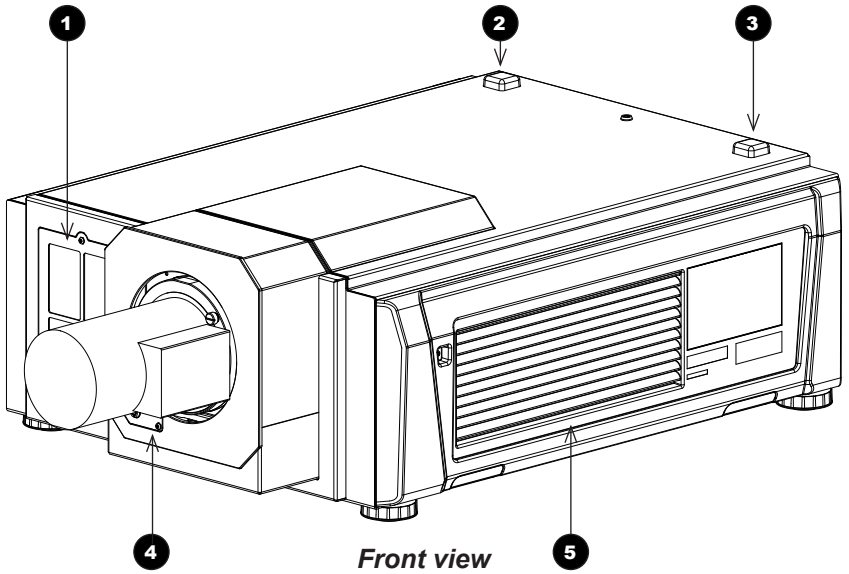
Ensure that the power outlet includes a ground connection as this equipment MUST be earthed.

Handle the power cable carefully and avoid sharp bends. Do not use a damaged power cable.

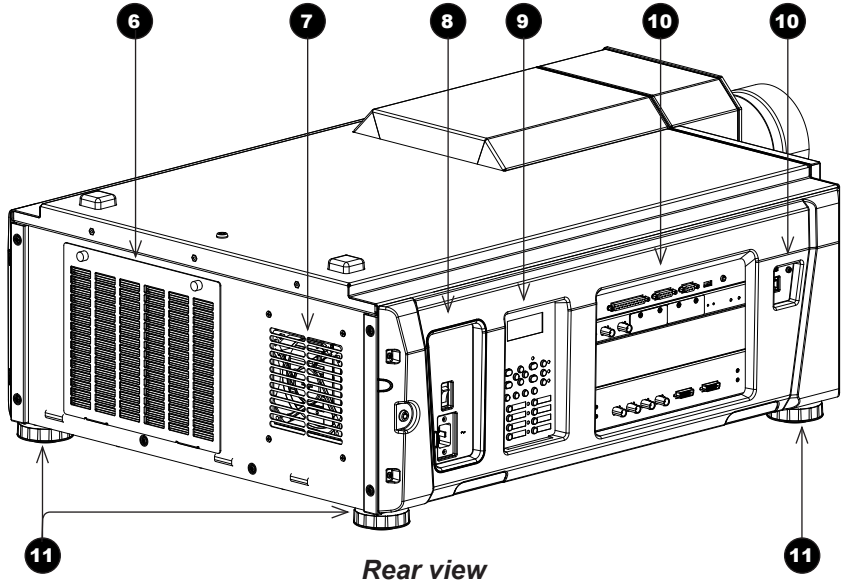
Projector Overview

Front and rear views

1. **Air inlet and filter**
2. **SYSTEM status indicator**
   When the projector is operating normally, this indicator lights green or orange. If an error occurs, the light becomes red. Depending on the scenario, the light can be steady or flashing.
3. **LIGHT status indicator**
   Turns on when the light source is switched on.
4. **Lens**
5. **Air outlet**
6. **Air inlet and filter**
7. **Air outlet**
8. **Power switch and power connection**
9. **Control panel with LED screen**
10. **Connections**
11. **Adjustable feet**



Front view

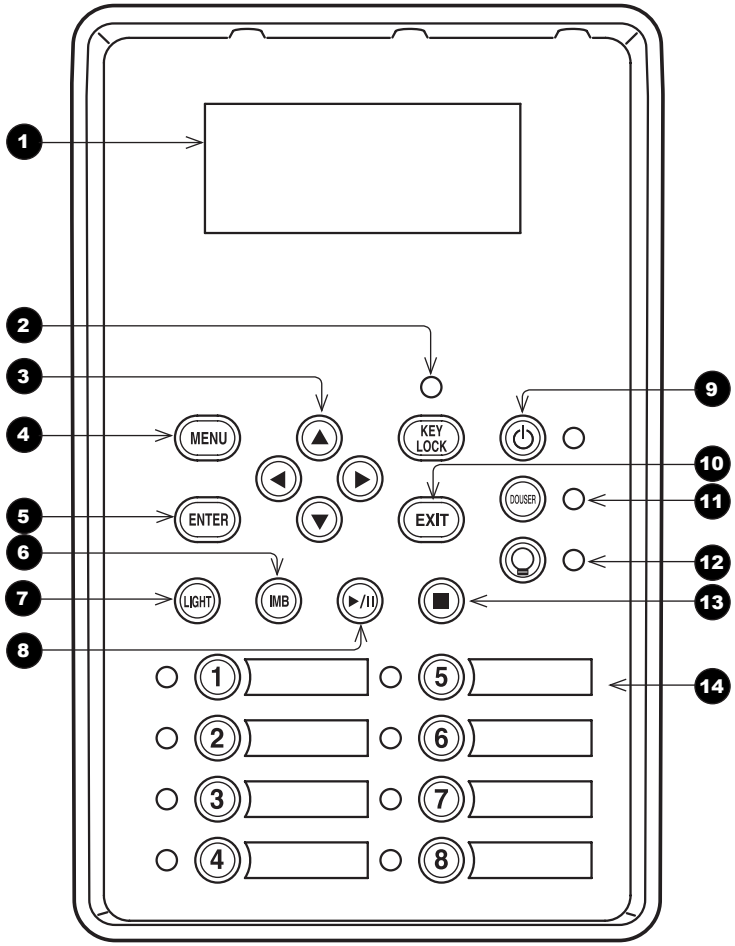


Rear view

Notes

Control panel

1. **LCD display**
2. **KEY LOCK button (with indicator)**
3. **Arrow buttons**
4. **MENU button**
5. **ENTER button**
6. ***not used in this configuration (except for entering alphanumeric values)***
7. **LIGHT button**
8. ***not used in this configuration***
9. **POWER button (with indicator)**
10. **EXIT button**
11. **DOUSER button (with indicator)**
12. **LIGHT ON / OFF button (with indicator)**
13. ***not used in this configuration***
14. **Preset buttons 1 to 8 (with indicators)**



Notes

See *Entering alphanumeric values* in the ***Operating Guide***.

Control panel button indicators

1 KEY LOCK

Behavior	Meaning
Off	Key lock is inactive.
On	Key lock is activated.

2 POWER ON / OFF

Behavior	Meaning
Off	The projector is switched off from the power supply or in STANDBY mode.
Flashing green	The projector is warming up (preparing to switch ON) or cooling down (preparing to switch OFF).
Steady green	The projector is switched on.

3 DOUSER ON / OFF

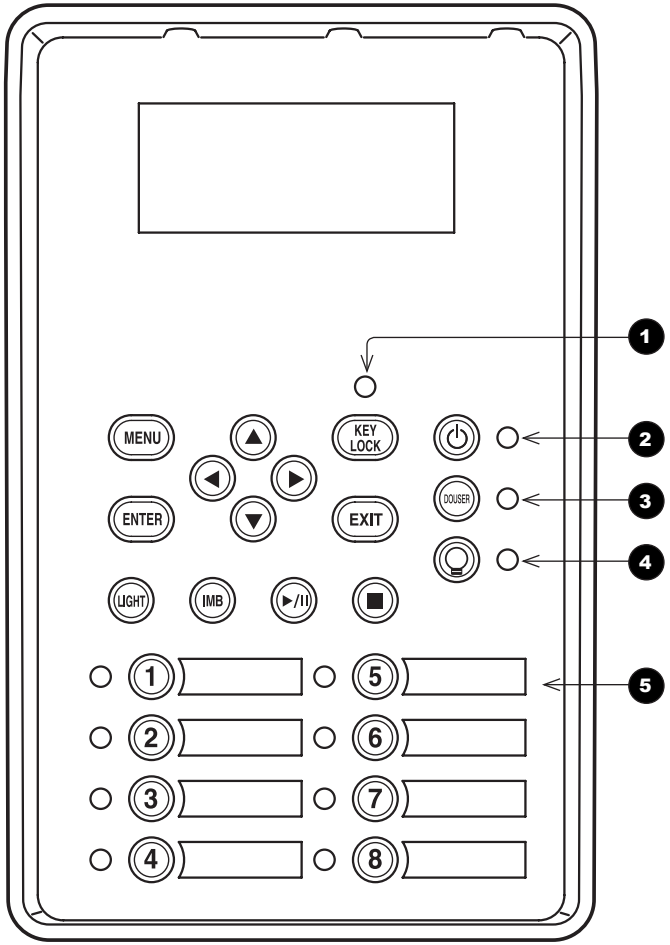
Behavior	Meaning
Off	The douser is opened.
Steady green	The douser is closed.

4 LIGHT ON / OFF

Behavior	Meaning
Off	The light source is switched off.
Steady green	The light source is switched on.

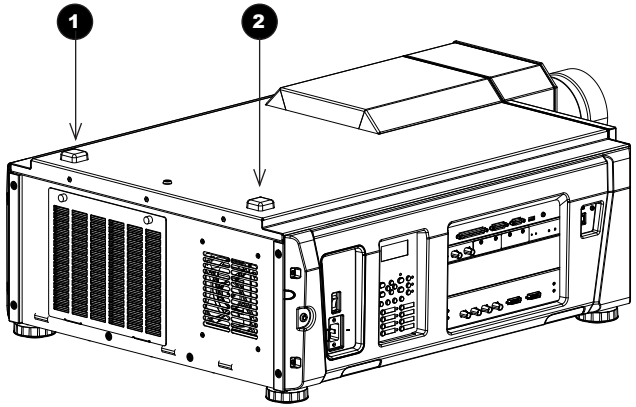
5 Presets

Behavior	Meaning
Off	The title is not assigned to the projector.
Steady white	The title is assigned to the projector but is not currently in use.
Steady green	The title is assigned to the projector and is currently in use.



Notes

Status indicators



1 LIGHT status indicator

Behavior		Meaning
Off		The light source is switched off.
On		The light source is switched on.

2 SYSTEM status indicator

Behavior		Meaning
Off		The projector is switched off.
Flashing green		The projector is warming up. The douser is closed and the light source is off.
Steady green		The projector is switched on.
Flashing amber		The projector is cooling down.
Steady amber		The projector is in standby.
Flashing red		Error, projection cannot continue. Check LCD screen for error message.
Flashing red, with buzzer		Error with safety implications. Projection cannot continue. Check LCD screen for error message.
Steady red		Non-fatal error, projection may continue. Check LCD screen for error message.

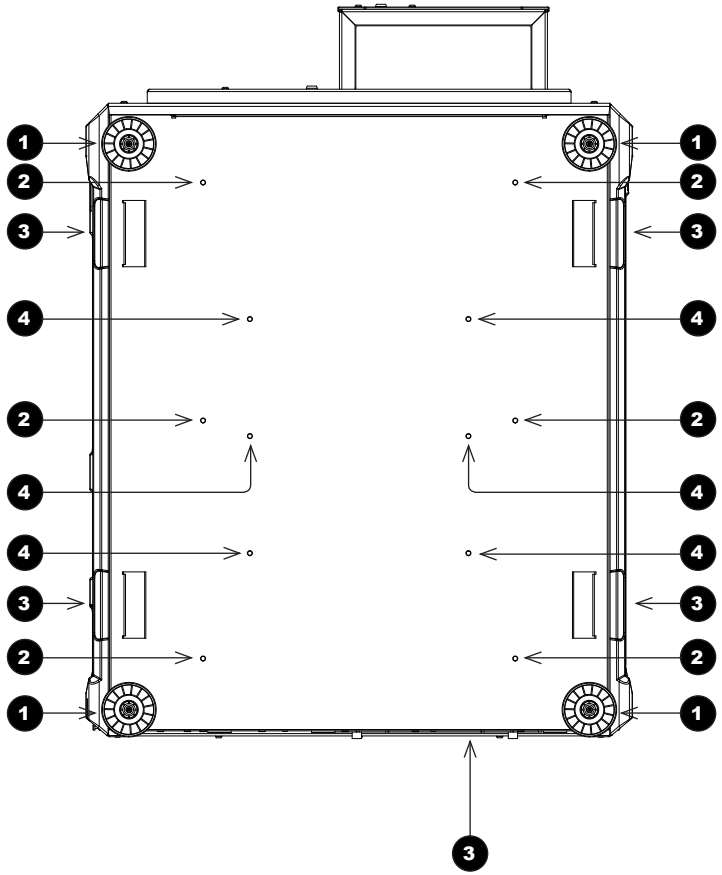
Notes

Positioning The Screen And Projector

Installation should be carried out by authorised personnel only.

1. Install the screen, ensuring that it is in the best position for viewing by your audience.
2. Mount the projector, ensuring that it is at a suitable distance from the screen for the image to fill the screen. Set the adjustable feet so that the projector is level, and perpendicular to the screen.

The drawing below shows the bottom of the projector. The positions of the feet for table mounting, and the fixing holes for ceiling mounting are clearly visible. The illustration also shows the positions of the four handles which facilitate safe carriage.



1. **Four adjustable feet**
2. **Six M6 holes for ceiling mount (set A)**
   The screws should not penetrate more than 15 mm into the body of the projector.
3. **Handles for safe carriage**
4. **Six M6 holes for ceiling mount (set B)**
   The screws should not penetrate more than 15 mm into the body of the projector.

Notes

Always allow the projector to cool for 5 minutes before disconnecting the power or moving the projector.

Ensure that there is at least 30 cm (12 in) of space between the ventilation outlets and any wall, and 10 cm (4 in) on all other sides.

Projectors are not designed to be stacked on top of each other unless a rigging frame is used.

Tilting restrictions

The projector can be operated in numerous positions.

Pitch

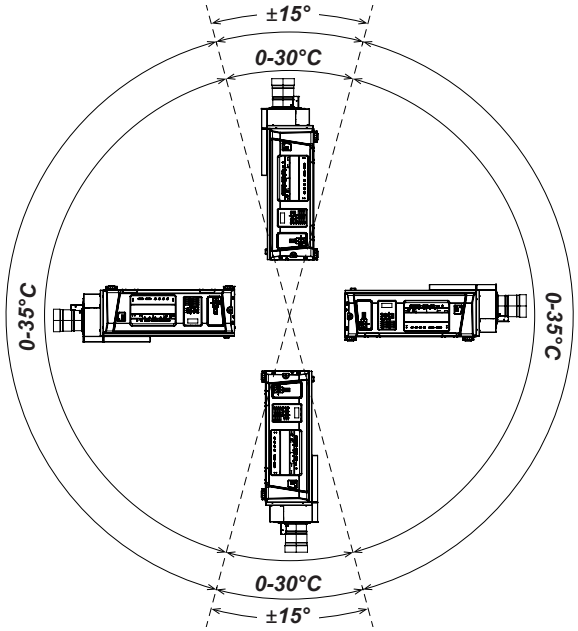
The projector can be positioned at any angle around the pitch axis. Please consider the following:

- When the projector is within 15° to either side of the vertical plane, the temperature of the operating environment needs to be between 0 and 30°C.
- In every other position, the operating temperature is between 0 and 35°C.

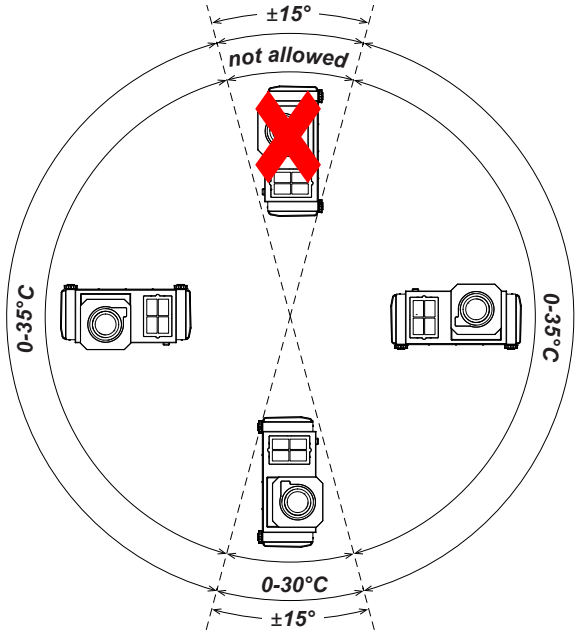
Roll

The projector can be positioned in numerous positions around the roll axis. Please consider the following:

- The projector cannot be positioned within 15° to either side of the vertical plane (in portrait mode) with the inputs pointing downward.
- When the projector is within 15° to either side of the vertical plane (in portrait mode) with the inputs pointing upward, the temperature of the operating environment needs to be between 0 and 30°C.
- In every other position, the operating temperature is between 0 and 35°C.



Pitch



Roll

Notes

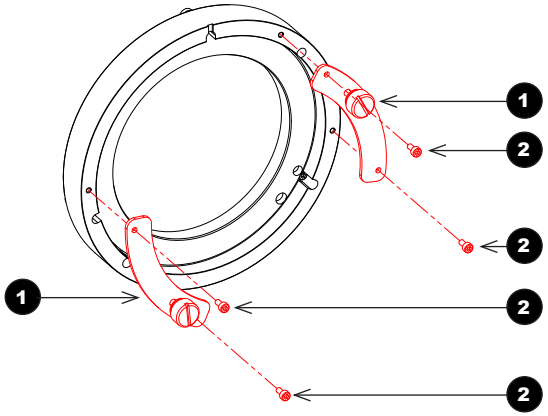
If you wish to use the projector in portrait mode, please consult your dealer in advance.

Do not attempt to install the projector yourself.

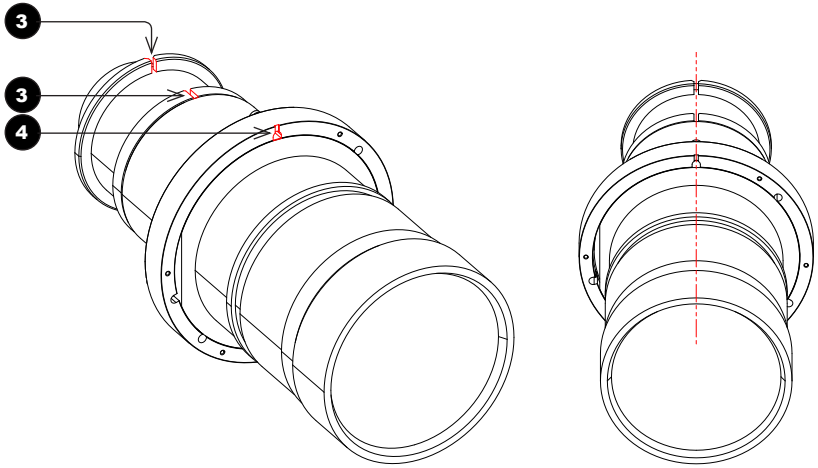
Lens Assembly And Fitting

Assembling the lens

1. Detach the ***retaining plates*** (1) from the lens holder.
   Use a 2.5 mm Allen key to remove the ***M3 socket head screws*** (2).



2. Insert the lens into the lens holder. Align ***the notches on the lens*** (3) with ***the notch on the holder*** (4).



Notes

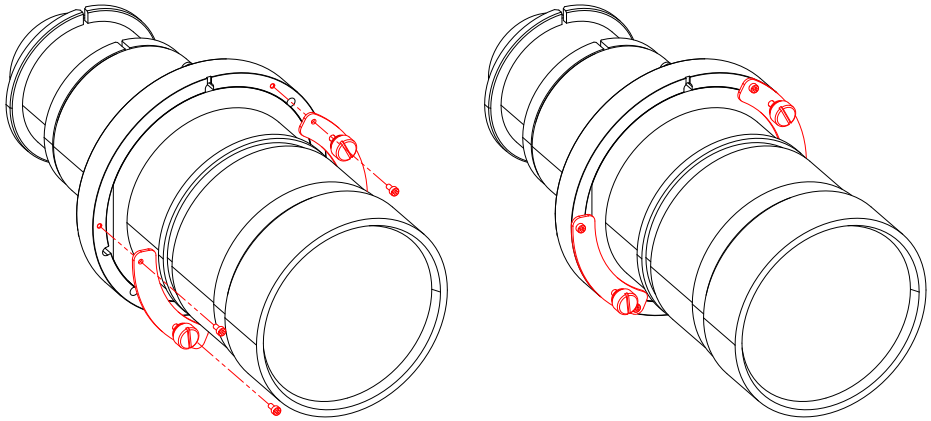
Before changing the lens, always make sure the projector is switched off and fully disconnected from its power supply.

When changing the lens, avoid using excessive force as this may damage the equipment.

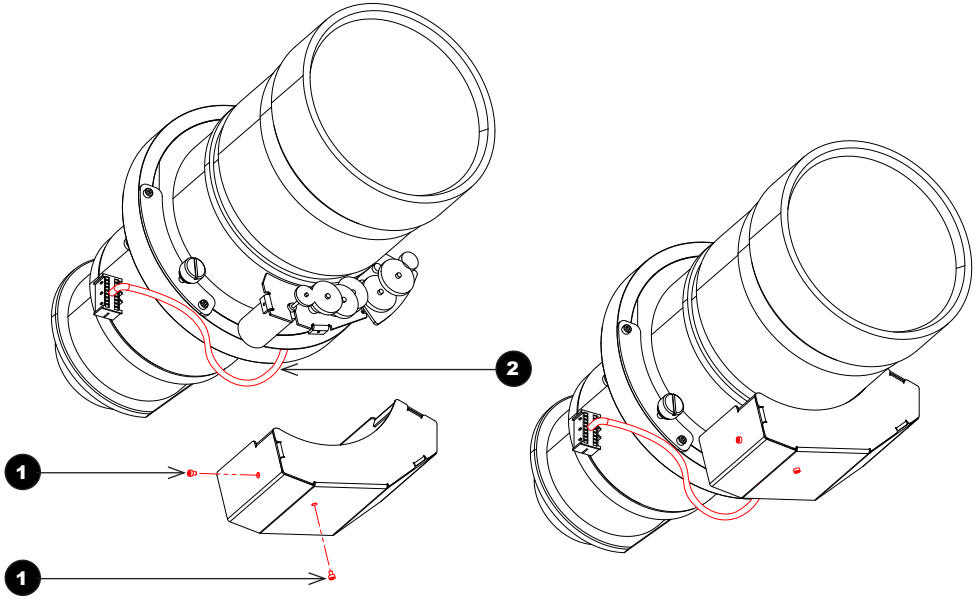
Take care to preserve the original lens packaging and protective caps for future use.

The projector will not power on without the lens fitted.

3. Keeping the lens and holder aligned, secure the retaining plates removed earlier.



4. Attach the motor cover using the two ***M2 socket head screws*** (1) provided. Ensure ***the connector cable*** (2) is not trapped.



Notes

Before changing the lens, always make sure the projector is switched off and fully disconnected from its power supply.

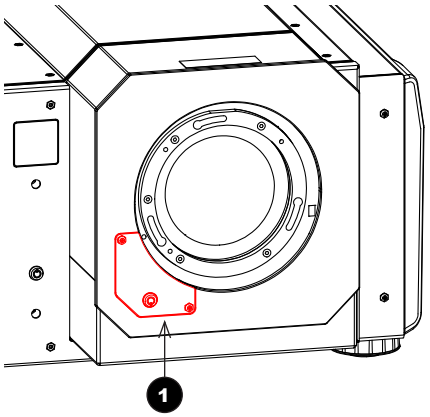
When changing the lens, avoid using excessive force as this may damage the equipment.

Take care to preserve the original lens packaging and protective caps for future use.

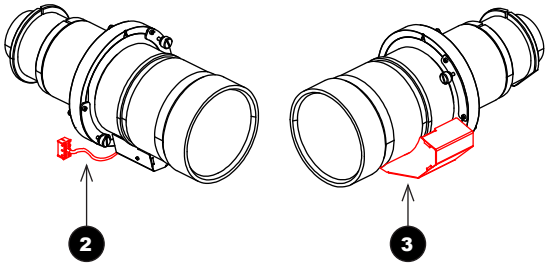
The projector will not power on without the lens fitted.

Inserting a new lens

1. Remove the ***connector cover*** 1: it is held in position by two screws and a key.



2. Position the lens so that, if viewed from the front:
   - the ***control cable*** 2 is on the left
   - the ***motor cover*** 3 is on the right



Notes

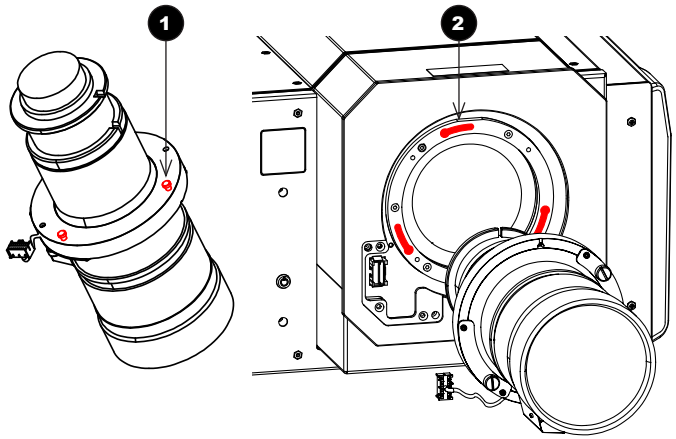
Before changing the lens, always make sure the projector is switched off and fully disconnected from its power supply.

When changing the lens, avoid using excessive force as this may damage the equipment.

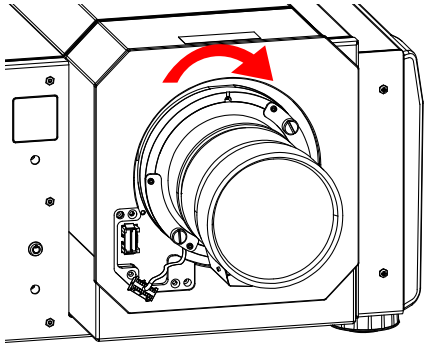
Take care to preserve the original lens packaging and protective caps for future use.

The projector will not power on without the lens fitted.

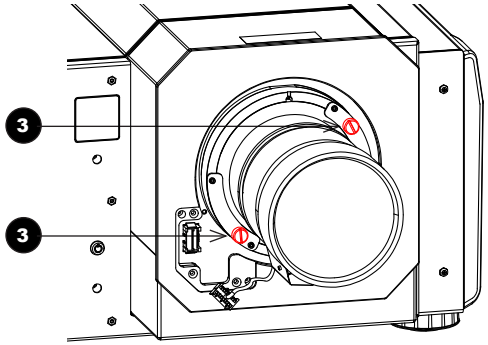
3. Insert the lens into the mount.
   Engage the three ***locating studs*** (1) into the corresponding ***slots*** (2) on the mount.



4. Rotate the lens clockwise until the studs slide all the way into the slots.



5. Tighten the two ***fixing screws*** (3) on the lens holder.



Notes

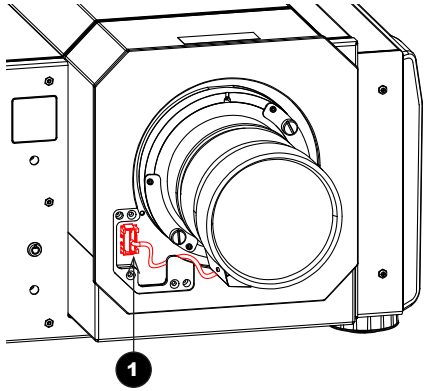
Before changing the lens, always make sure the projector is switched off and fully disconnected from its power supply.

When changing the lens, avoid using excessive force as this may damage the equipment.

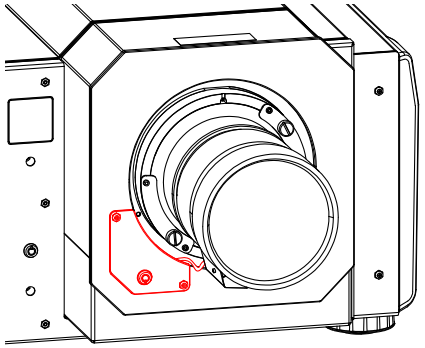
Take care to preserve the original lens packaging and protective caps for future use.

The projector will not power on without the lens fitted.

6. Insert the control cable plug into the ***connector socket*** (1).
   Place the excess wire behind the front cover of the projector.



7. Replace the connector cover, making sure the cable is not trapped.



Notes

Before changing the lens, always make sure the projector is switched off and fully disconnected from its power supply.

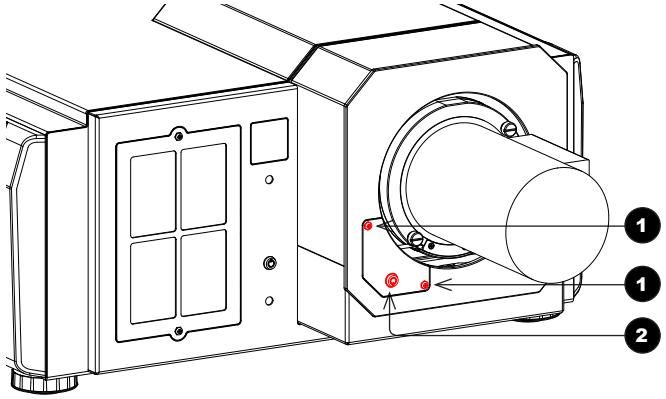
When changing the lens, avoid using excessive force as this may damage the equipment.

Take care to preserve the original lens packaging and protective caps for future use.

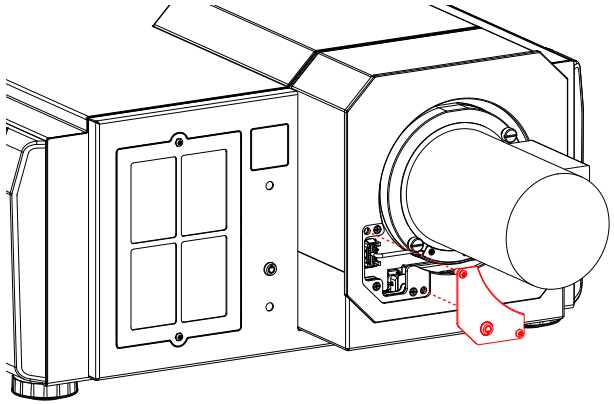
The projector will not power on without the lens fitted.

Removing the lens

1. Loosen ***the two captive screws*** ❶ on the lens remote lock cover, then release ***the lock*** ❷ using the provided key.



2. Remove the cover.



Notes

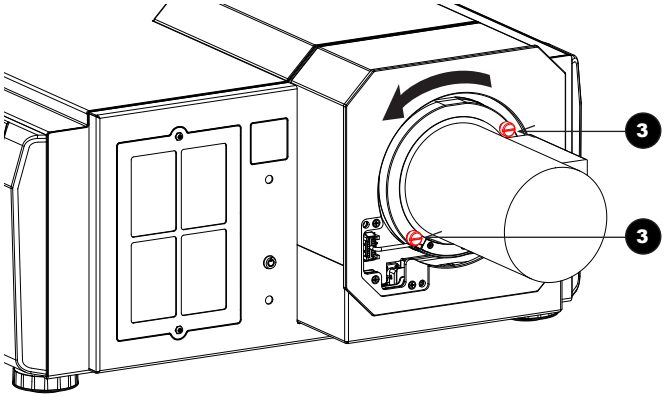
Before changing the lens, always make sure the projector is switched off and fully disconnected from its power supply.

When changing the lens, avoid using excessive force as this may damage the equipment.

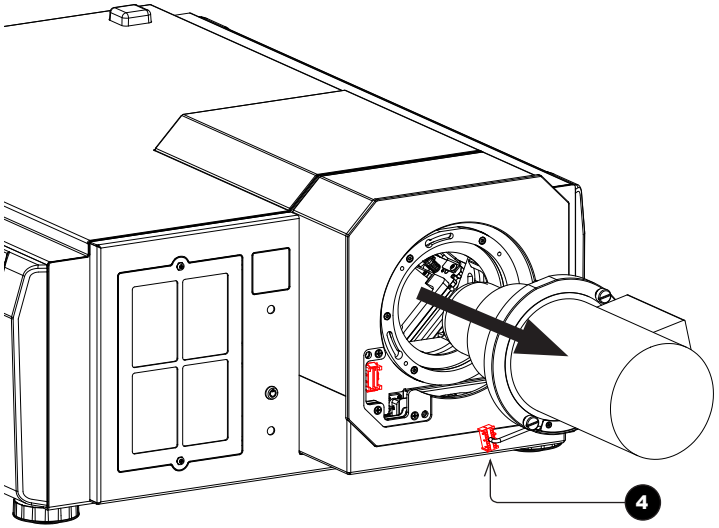
Take care to preserve the original lens packaging and protective caps for future use.

The projector will not power on without the lens fitted.

3. Loosen ***the two captive screws*** **3** on the lens and rotate the lens counterclockwise until it stops.



4. Unplug ***the remote lock connector*** **4** and pull the lens out of its socket.



Notes

Before changing the lens, always make sure the projector is switched off and fully disconnected from its power supply.

When changing the lens, avoid using excessive force as this may damage the equipment.

Take care to preserve the original lens packaging and protective caps for future use.

The projector will not power on without the lens fitted.

Cleaning And Replacing The Filters

General notes

Air filters are attached over the air inlet of the projector to prevent dust. The air filters should be cleaned periodically in order to maintain projector performance. The air filters should also be replaced with new filters after roughly 10,000 hours.

To view the usage time of the air filters, on the LCD display, go to **Information > Usage**.

When ordering replacement air filters, specify the part number (NP-11AF01).

When replacing air filters, replace the air filter in the front panel of the projector (1 piece) and the air filters in the rear panel (2 pieces) at the same time. If you do not replace the air filters at the same time, the usage time cannot be calculated correctly.

Cleaning the air filters

Please remember to clean the air filters when the filter usage time reaches 2000 hours.

When the air filter usage time reaches 2000 hours, the message ***FilterCleaning Time*** is shown on the display.

Please be careful not to damage the air filters when cleaning them. If you find any damage, such as a hole on the surface of the air filter, replace it with new one.

After cleaning the air filters, on the LCD display, select **Configuration > Reset > FilterCleaning**. The filter cleaning message will be turned off.

Replacing the air filters

Please remember to replace the air filters when the filter usage time reaches 10,000 hours.

When the air filter usage time reaches 10,000 hours, the message ***Filter Time Over*** appears on the display.

After replacing the air filters, on the LCD display, select **Configuration > Reset > Filter Usage** to reset the air filter usage time.

Notes

Before changing the filters, always make sure the projector is switched off and fully disconnected from its power supply.

When changing the filters, avoid using excessive force as this may damage the equipment.

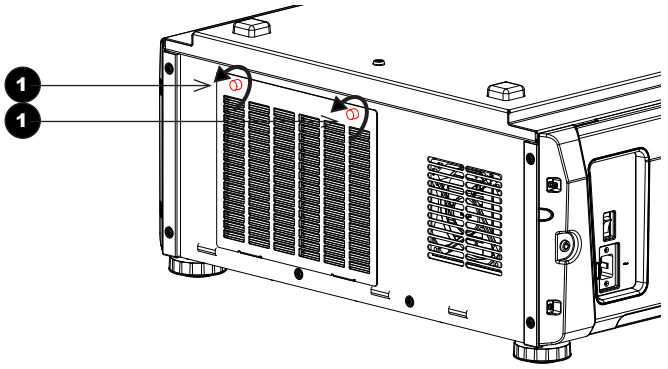
The air filters should be cleaned every 2000 hours and replaced after approximately 10,000 hours to maintain projector performance.

It may be required to clean the air filters more frequently than stated above, depending on the circumstances. In order to maintain steady performance from the projector, frequent cleaning is strongly recommended.

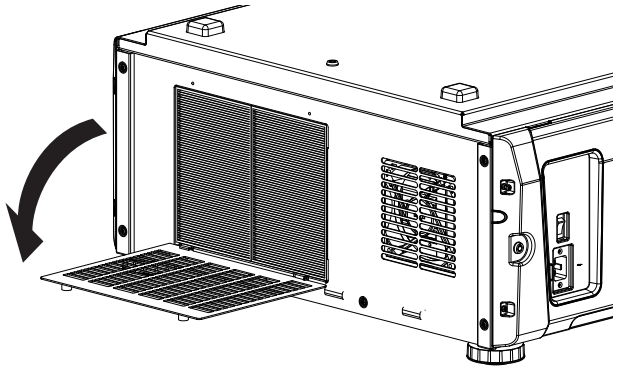
It may also be required to replace the air filters more frequently than stated above, depending on the circumstances.

Rear filters

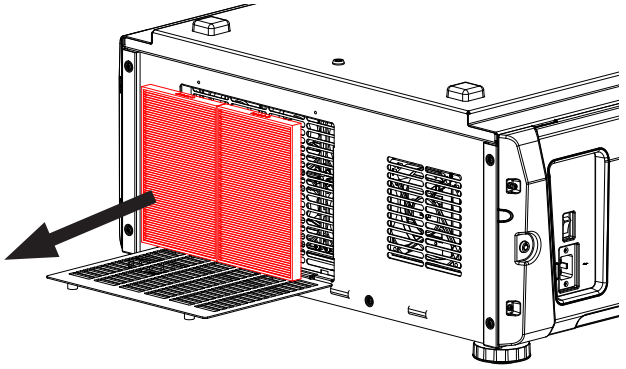
1. Loosen the two ***knobs*** **1** holding the filter cover by turning them counterclockwise.
   Use a Phillips screwdriver if necessary.



2. Tilt the filter cover to open it.



3. Remove the filters. Grasp the top and bottom or left and right ends of each air filter and remove it by pulling toward you.



Notes

The knobs are captive on the removable cover.

Before changing the filters, always make sure the projector is switched off and fully disconnected from its power supply.

When changing the filters, avoid using excessive force as this may damage the equipment.

The air filters should be cleaned every 2000 hours and replaced after approximately 10,000 hours to maintain projector performance.

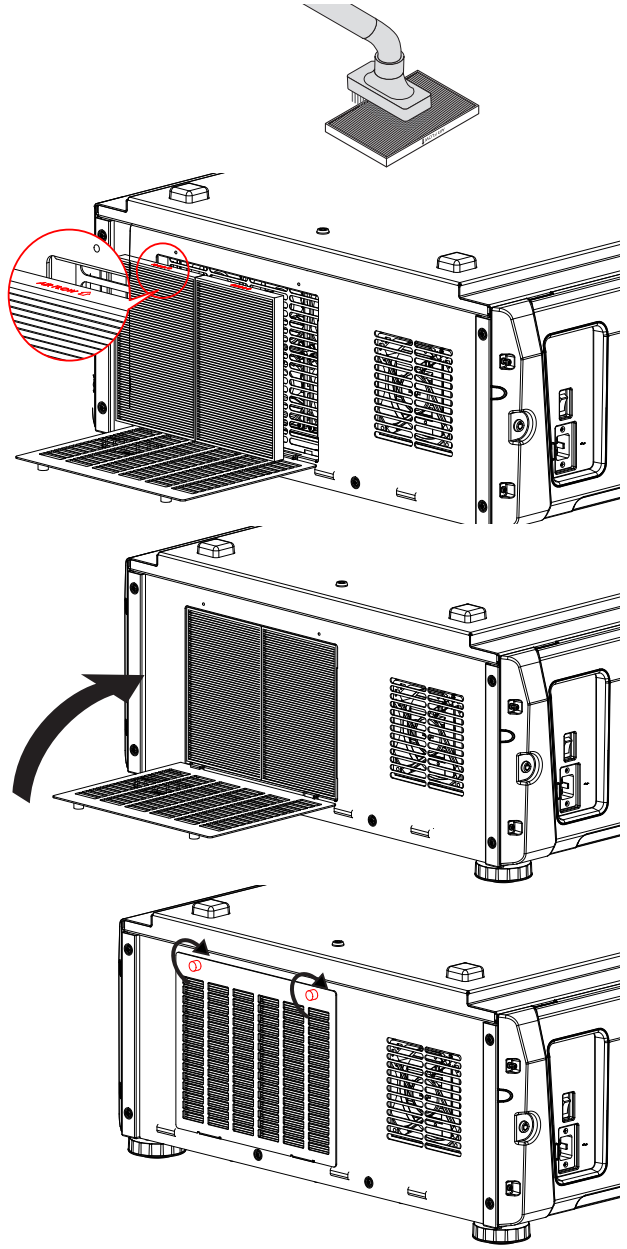
4. If you are replacing the filters, skip this step.

   To clean the filters, use a vacuum cleaner brush attachment to vacuum away dust from the air filters. Avoid making direct contact without an attachment or using a nozzle attachment.

5. Mount the air filters to the projector. Look for an arrow (AIR FLOW↑) indicating the installation direction on the side of the air filter. Point the arrow towards the projector.

6. Close the filter cover.

7. Tighten the knobs clockwise to secure the cover.



Notes

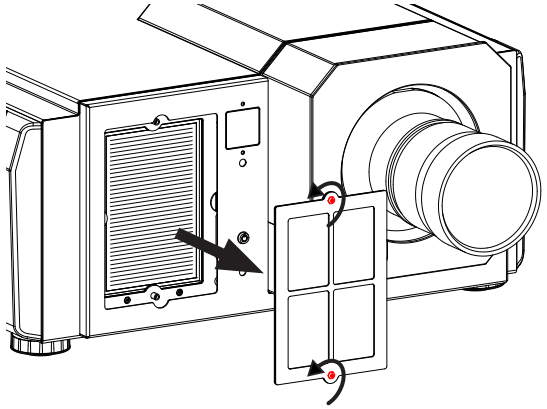
Before changing the filters, always make sure the projector is switched off and fully disconnected from its power supply.

When changing the filters, avoid using excessive force as this may damage the equipment.

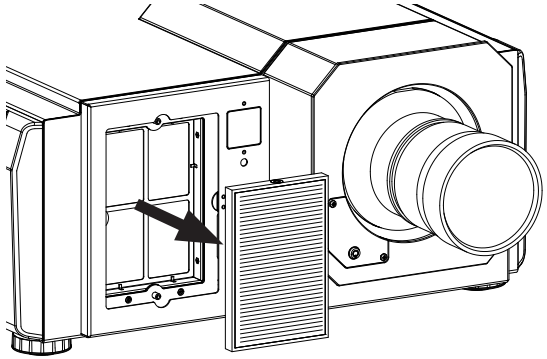
The air filters should be cleaned every 2000 hours and replaced after approximately 10,000 hours to maintain projector performance.

Front filter

1. Loosen the two captive screws on the filter cover and remove the cover.

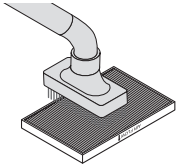


2. Remove the air filter.



3. If you are replacing the filter, skip this step.

   To clean the filter, use a vacuum cleaner brush attachment to vacuum away dust from the air filter. Avoid making direct contact without an attachment or using a nozzle attachment.



Notes

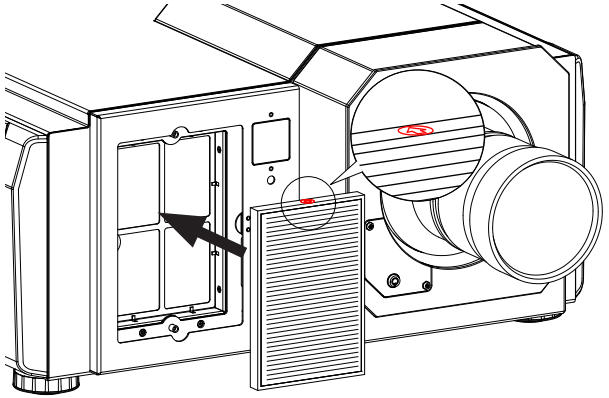
Before changing the filters, always make sure the projector is switched off and fully disconnected from its power supply.

When changing the filters, avoid using excessive force as this may damage the equipment.

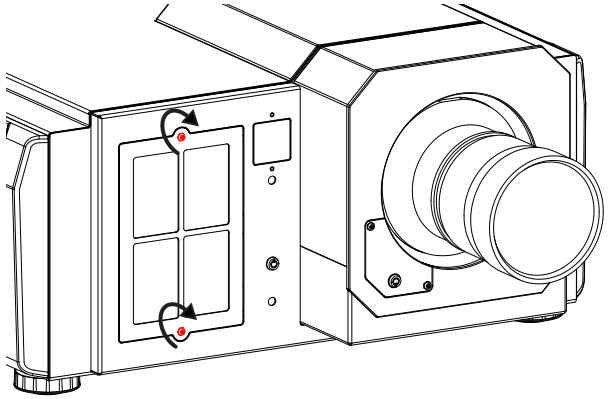
The air filters should be cleaned every 2000 hours and replaced after approximately 10,000 hours to maintain projector performance.

4. Mount the air filter to the projector.

   Look for an arrow indicating the installation direction on the side of the air filter. Point the arrow towards the projector.



5. Mount the filter cover to the projector. Tighten the two captive screws to secure the cover.



Notes

Before changing the filters, always make sure the projector is switched off and fully disconnected from its power supply.

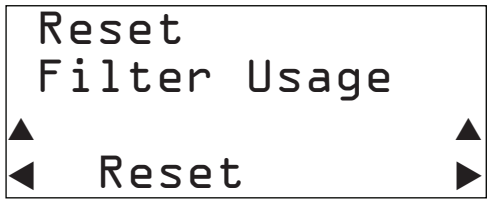
When changing the filters, avoid using excessive force as this may damage the equipment.

The air filters should be cleaned every 2000 hours and replaced after approximately 10,000 hours to maintain projector performance.

Reset the air filter usage time

1. Turn on the projector.
2. Open the menu and go to **Configuration > Reset**.

   Filter Usage resets the filter usage time.



Notes

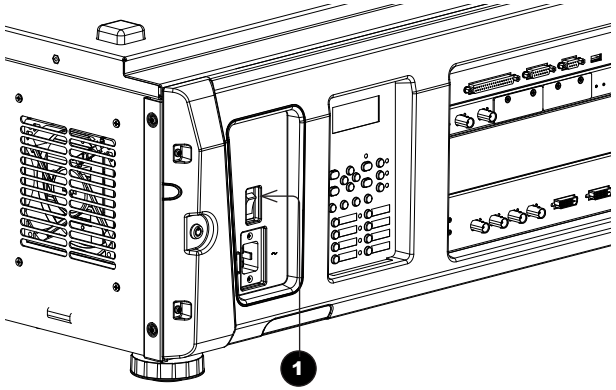
The air filters should be cleaned every 2000 hours and replaced after approximately 10,000 hours to maintain projector performance.

Operating The Projector

Switching the projector on

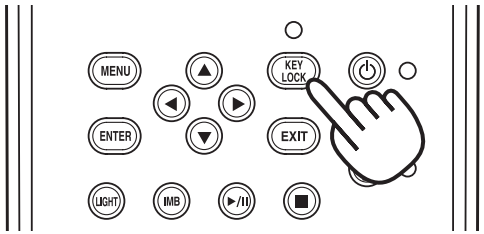
1. Make sure the ***power switch*** **1** above the AC mains inlet is in the OFF position. Connect the power cable between the mains supply and the projector, then turn the power switch on.

   The **SYSTEM** status indicator lights a steady amber to show that the projector is now in STANDBY mode.



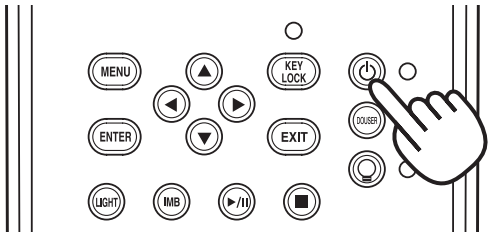
2. ***(optional step)*** If no button is pressed within 30 seconds of the projector entering STANDBY mode, the control panel becomes locked.

   To unlock the control panel, press and hold the **KEY LOCK** button for one second or longer.



3. To switch from STANDBY to ON mode, press and hold the **POWER** button for three seconds or longer.

   During the startup process, the **SYSTEM** status indicator flashes green. When the projector is fully switched on, the **SYSTEM** status indicator lights a steady green.



Notes

*See also **Power Supply** earlier in this guide.*

Do not turn off the projector from the power switch or disconnect the power cord while the projector is working or cooling down.

Use only the power cable provided.

Ensure that the power outlet includes a ground connection as this equipment MUST be earthed.

Handle the power cable carefully and avoid sharp bends. Do not use a damaged power cable.

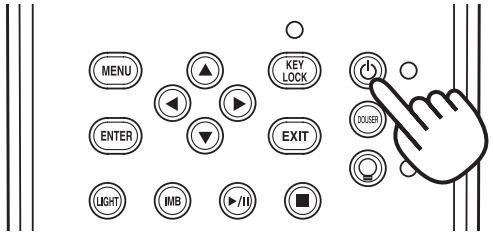
Switching the projector off

1. Press and hold the **POWER** button for three seconds or longer.

   The light source switches off and the projector begins cooling down. During the cooling down process, the **SYSTEM** status indicator flashes amber. The fan continues to work and a message is displayed on the LCD screen to show that the projector is still not switched off.

   When the fan switches off, the **SYSTEM** status indicator lights a steady amber to indicate that the projector is now in STANDBY mode.

2. To switch the projector off completely, turn the power switch OFF.



Notes

Do not turn off the projector from the power switch or disconnect the power cord while the projector is working or cooling down.

Use only the power cable provided.

Ensure that the power outlet includes a ground connection as this equipment MUST be earthed.

Handle the power cable carefully and avoid sharp bends. Do not use a damaged power cable.

Selecting a title or test pattern

The projector arrives with titles and test patterns already configured. If you need to change the configuration, contact your dealer.

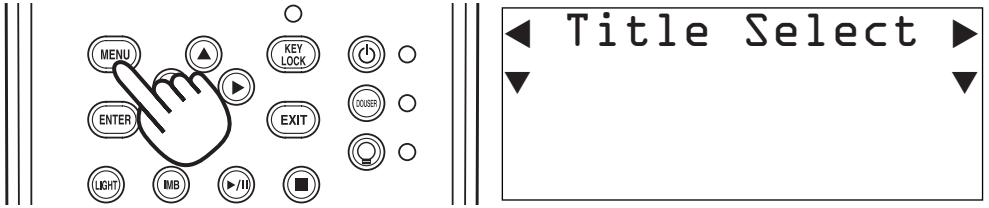
Selecting a title

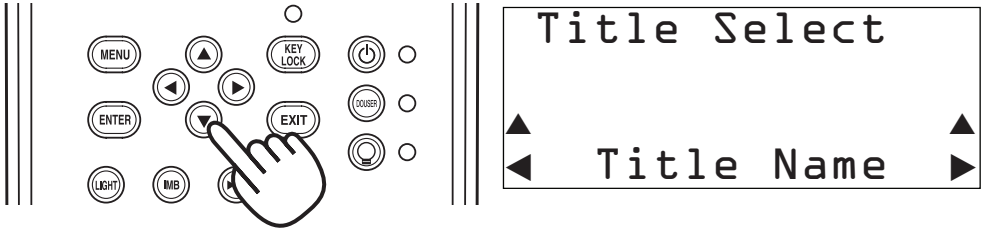
Connect the title you wish to display and switch on the input source, then switch on the projector. If necessary, unlock the keypad.

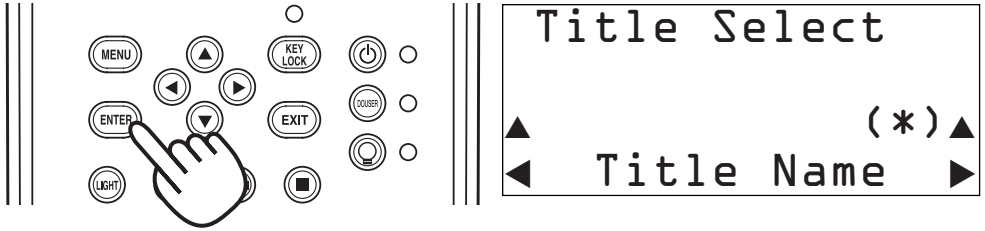
If the title is assigned a shortcut, press the shortcut button and the projector will begin displaying the title.

If there is no shortcut assigned to the title:

1. Press the **MENU** button.
2. Press the **LEFT** or **RIGHT** button to cycle through the list of menus until **Title Select** appears on the LCD screen. The list of menus is as follows:
   - **Title Select**
   - **Configuration**
   - **(Title Setup)**
   - **Information**
   - **...**
3. When **Title Select** is displayed, press **DOWN**.
4. Press **LEFT** or **RIGHT** to go through the list of available titles until you reach the title you wish to display.
5. Press **ENTER** to confirm your choice. The projector begins displaying the title. An asterisk mark (*) appears on the LCD screen to indicate the current selection.







Notes

For detailed information about switching on the projector and unlocking the keypad, see ***Switching the projector on*** *earlier in this guide.*

Menus and menu items displayed in parentheses can only be accessed by service personnel.

Selecting a test pattern

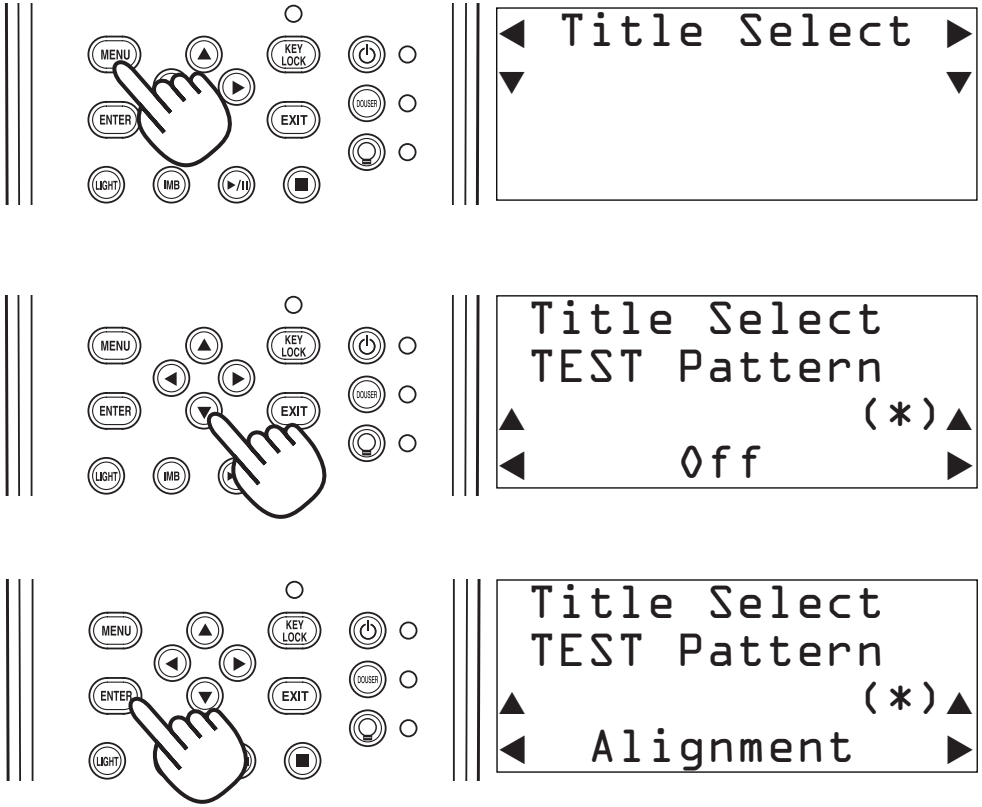
Switch on the projector and, if necessary, unlock the keypad.

If the test pattern is assigned a shortcut, press the shortcut button and the projector will begin displaying the test pattern.

If there is no shortcut assigned to the test pattern:

1. Press the **MENU** button.
2. Press the **LEFT** or **RIGHT** button to cycle through the list of menus until **Title Select** appears on the LCD screen. The list of menus is as follows:
   - **Title Select**
   - **Configuration**
   - **(Title Setup)**
   - **Information**
   - **...**
3. When **Title Select** is displayed, press **DOWN**.
4. Press **LEFT** or **RIGHT** until **Title Select** is set to **TEST Pattern**.
5. Press **DOWN** again, then press **LEFT** or **RIGHT** to cycle through the list of test patterns.
6. When you have arrived at the test pattern you wish to display, press **ENTER** to confirm your choice. The projector begins displaying the test pattern. An asterisk mark (*) appears on the LCD screen to indicate the current selection.

To cancel test pattern display, cycle through the list again and select OFF, then press **ENTER** to confirm your choice.



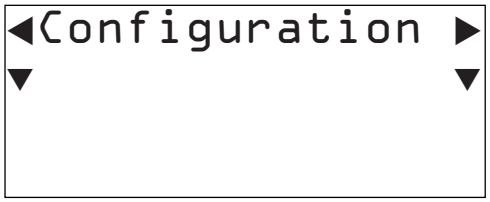
Notes

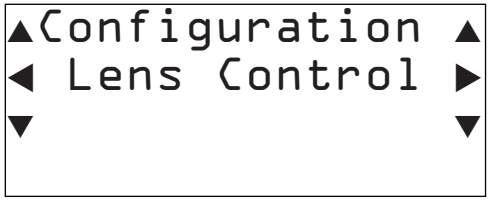
For detailed information about switching on the projector and unlocking the keypad, see ***Switching the projector on*** *earlier in this guide.*

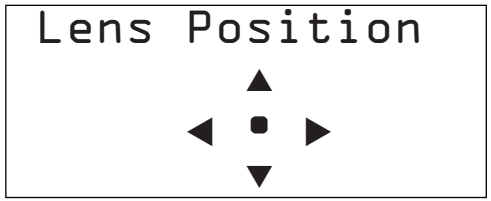
Adjusting the lens

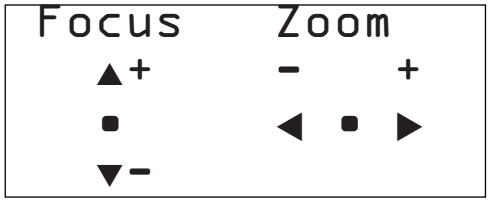
1. Press **MENU**.
2. Press the **LEFT** or **RIGHT** button to cycle through the list of menus until **Configuration** appears on the LCD screen. The list of menus is as follows:
   - **Title Select**
   - **Configuration**
   - **(Title Setup)**
   - **Information**
   - **...**
3. Press **DOWN** to enter the **Configuration** menu, then press the **LEFT** or **RIGHT** button to cycle through configuration submenus until you reach **Lens Control**.

   Lens controls are accessed in two modes - **Lens Position** and **Focus Zoom**. Press **ENTER** to switch between the two modes.
   - In **Lens Position** mode, use the arrow buttons to shift the lens in the desired direction.
   - In **Focus Zoom** mode, use:
     - **UP** and **DOWN** to change the focus,
     - **LEFT** and **RIGHT** to change the zoom.





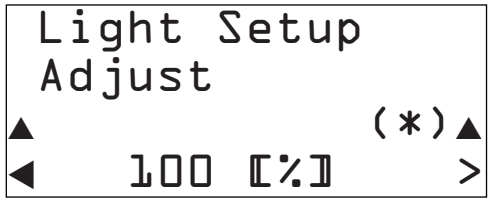




Notes

Adjusting the brightness

1. Press **MENU**.
2. Press the **LEFT** or **RIGHT** button to cycle through the list of menus until **Configuration** appears on the LCD screen. The list of menus is as follows:
   - **Title Select**
   - **Configuration**
   - **(Title Setup)**
   - **Information**
   - **...**
3. Press **DOWN** to enter the **Configuration** menu, then press the **LEFT** or **RIGHT** button to cycle through configuration submenus until you reach **Light Setup**.
4. Use the **LEFT** and **RIGHT** arrow buttons to adjust the brightness.



Notes

NEC

Projector

PH1201QL

Connection Guide

Model No. NP-PH1201QL

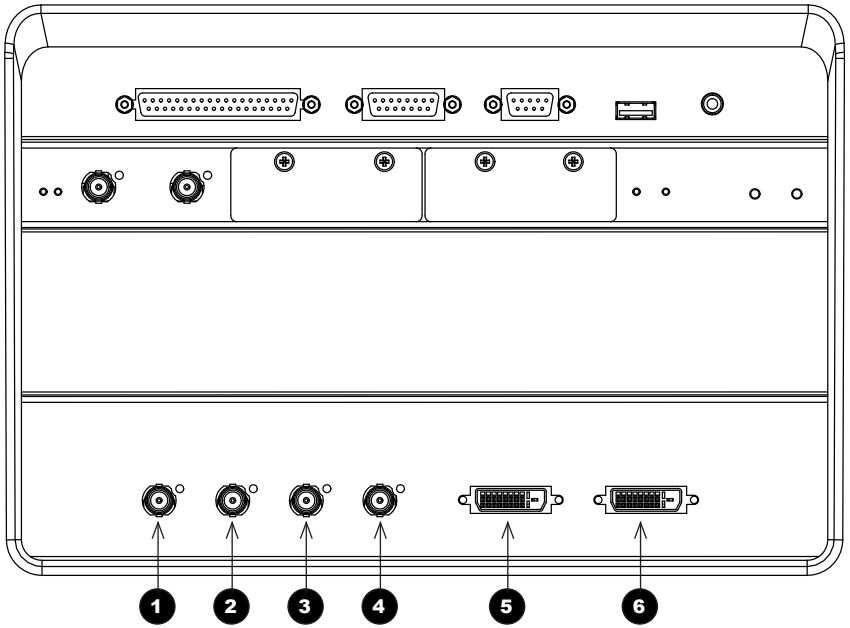
IN THIS GUIDE

Signal Inputs **35**
SDI and DVI inputs **35**
3D Sync **36**
Indicators on the terminal panel **37**
EDID on the DVI inputs **38**
Using HDMI/DVI/DisplayPort switchers with the projector **38**
Control Connections **39**

Signal Inputs

SDI and DVI inputs

The following inputs are available on the main connections panel:



1. **3G-SDI A**
   3G-SDI
2. **3G-SDI B**
   3G-SDI
3. **3G-SDI C**
   3G-SDI
4. **3G-SDI D**
   3G-SDI
5. **DVI A**
   DVI-D
6. **DVI B**
   DVI-D

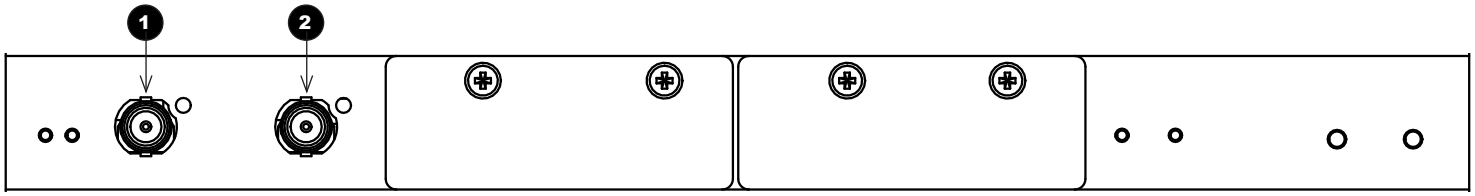
The SDI inputs can be used for both 3G-SDI and HD-SDI.

The four SDI inputs can be used separately with a 2K or 1080p image, which the projector will scale to 4K, or simultaneously, to project an image from a full 4K source.

The two DVI inputs can be used simultaneously as well, to display native 4K resolution.

Notes

3D Sync



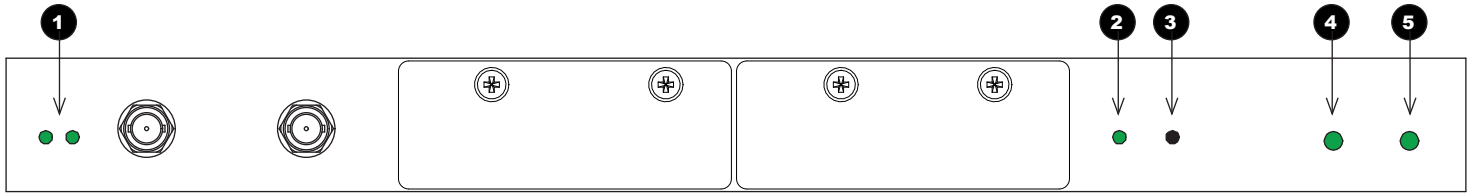
Terminal panel

1 **3D Sync In**
Sync input signal
Connect the 3D sync from your graphics card or server.

2 **3D Sync Out**
Sync output signal
Connect this to your IR emitter or ZScreen.

Notes

Indicators on the terminal panel



Main connections panel

1 **3D Sync In / Out**
These indicators light solid green if 3D sync is present.

2 **Option A**
If an input on Option A board is in use, this indicator lights a solid green color.
If an input on Option A board is selected but the source is not present, the indicator flashes green.

3 **Option B**
This indicator is not used.

4 **Power**
This indicator lights a solid green color if the projector is switched on.

5 **Health**
This indicator flashes amber, then green, during boot up.
When the projector is switched on and fully functional, the indicator lights solid green.

Notes

EDID on the DVI inputs

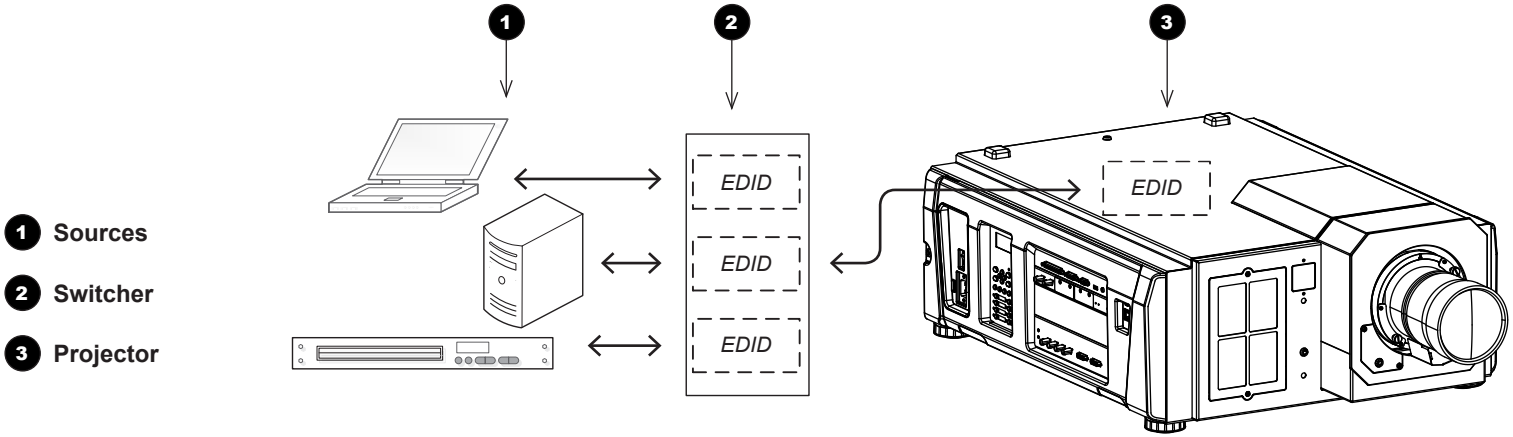
If you are using a computer DVI card or another source that obeys the EDID protocol, the source will automatically configure itself to suit the projector.

Otherwise please refer to the documentation supplied with the source to manually set the resolution to the DMD™ resolution of the projector or the nearest suitable setting. Switch off the source, connect to the projector, then switch the source back on again.

Using HDMI/DVI/DisplayPort switchers with the projector

When using a DVI source switcher with the projector, it is important to set the switcher so that it passes the projector EDID through to the source devices. If this is not done, the projector may not be able to lock to the source or display the source correctly as its video output timings may not be compatible with those of the projector. Sometimes this is called transparent, pass-through or clone mode. See your switcher's manual for information on how to set this mode.

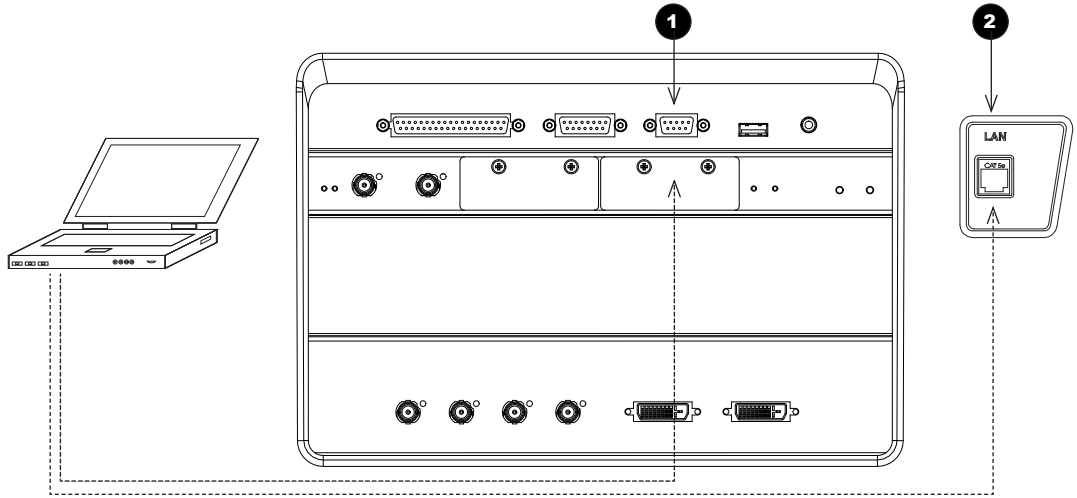
Additionally, sources which use HDCP encryption may not display properly when connected to the projector via a switcher. Refer to the switcher's manual for more information.



The EDIDs in the switcher should be the same as the one in the projector.

Notes

Control Connections



1 **PC control terminal (RS-232)**
Use this terminal when controlling the projector in serial connection from a PC.

2 **LAN port (LAN)**
Use this port when controlling the projector in LAN connection from a PC.

Notes

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NEC

Projector

PH1201QL

Operating Guide

Model No. NP-PH1201QL

IN THIS GUIDE

Using The Control Panel 43
LCD display overview 43
In STANDBY mode 43
In operation 43
When showing menus 44
Locking and unlocking the control panel 45
Working with menus 46
Entering alphanumeric values 46

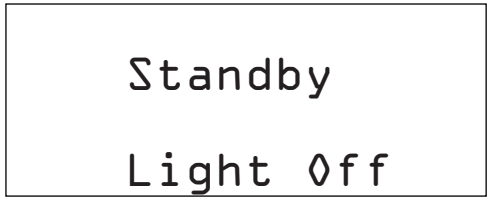
Using The Projector 47
Title Select menu 47
Selecting a test pattern 47
Configuration menu 48
Light Setup 48
Lens Control 48
Reset 48
Information menu 49
Light Output 49
Preset Button 49
Usage 49
Error Code 49
Version 50
IP Address 51
Setup Date 51
Option Status 51

Using The Control Panel

LCD display overview

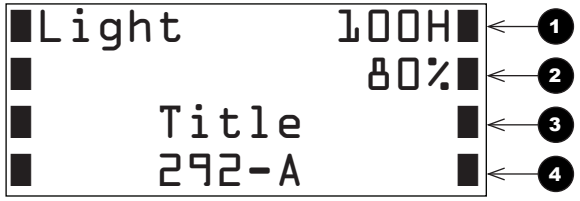
In STANDBY mode

When the projector is in STANDBY mode, the following is displayed on the LCD screen.



In operation

When the projector is in operation, the following is displayed on the LCD screen.

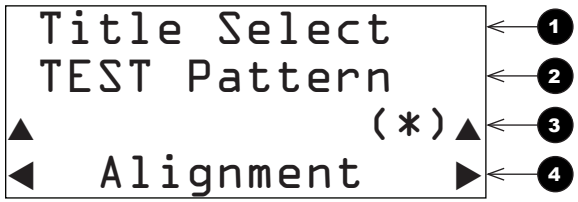


1. **Hours of light source use**
2. **Light source output (brightness)**
3. **Selected title**
4. **Selected video input port**

Notes

When showing menus

Typically the LCD display shows information on four lines:



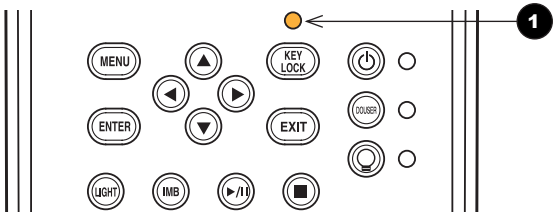
1. **Menu name**
2. **Submenu or setting name**
3. **An asterisk indicates the value shown below is the currently assigned value**
4. **Value of the setting**

Notes

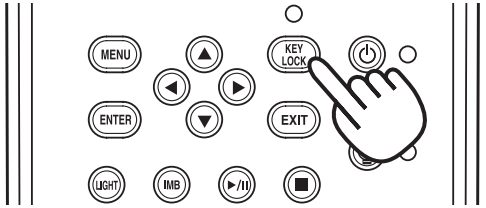
Locking and unlocking the control panel

Depending on the **Auto Key Lock** setting, the control panel may automatically lock itself following a period of inactivity.

When the control panel is locked, the ***KEY LOCK indicator*** 1 lights amber.



To lock or unlock the control panel, press and hold the **KEY LOCK** button for one second or longer.



Notes

Working with menus

- To access the projector menus, press **MENU**.
- Navigate with the arrow buttons:
  - Press the **UP** button to go above the current menu level.
  - Press the **DOWN** button to go below the current menu level.
  - When more items are available at the current level, go through the list using the **LEFT** and **RIGHT** arrow buttons.
- To select an item, navigate to the item and press **ENTER**.
- To return to the higher level, press **EXIT**.

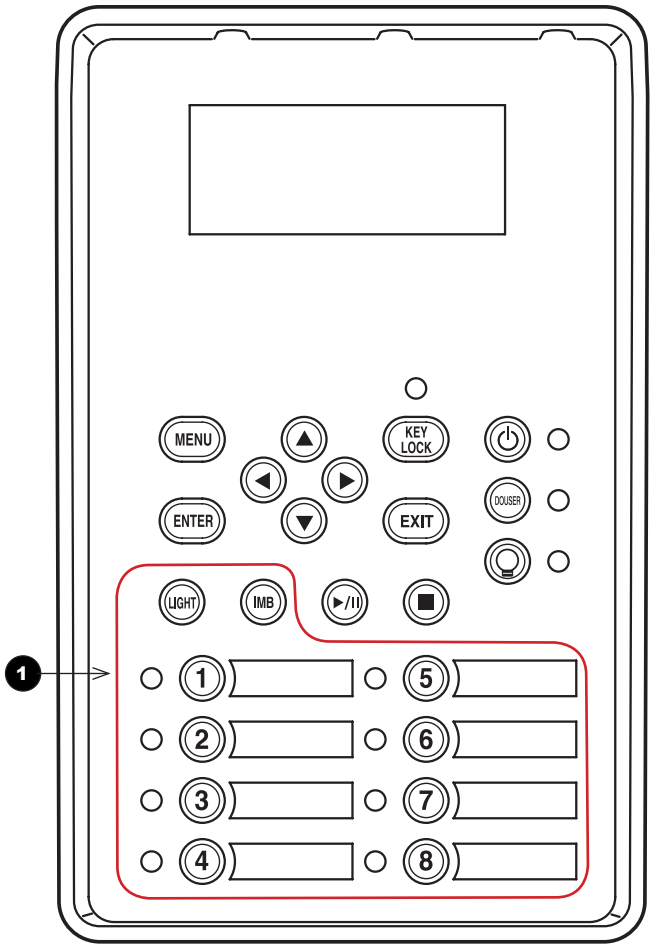
Entering alphanumeric values

Alphanumeric values are sometimes required, for example when writing the log file to an external memory location via USB.

To enter an alphanumeric character, use ***the eight preset buttons, LIGHT and IMB*** (1). Each button produces multiple characters. Pressing the button repeatedly cycles through the characters as shown in the table below.

Button	Character
1	A → B → C → 1 → a → b → c → ! ...
2	D → E → F → 2 → d → e → f → " ...
3	G → H → I → 3 → g → h → i → # ...
4	J- K → L → 4 → j → k → l → $ ...
5	M → N → O → 5 → m → n → o → % ...
6	P → Q → R → 6 → p → q → r → & ...
7	S → T → U → 7 → s → t → u → ' ...
8	V → W → X → 8 → v → w → x → (...
LIGHT	Y → Z → / → 9 → y → z → ? →) ...
IMB	* → , → . → 0 → ; → : → + → - ...

Advance to the next position using **RIGHT**. Return to the previous position using **LEFT**. Delete the current character value with **DOWN**.



Notes

Using The Projector

Title Select menu

Use this menu to select a title to be projected.

The projector contains a list of up to 100 registered titles. Use this menu to select a title from the list.

To select a title:

1. Open the menu. The **Title Select** menu appears by default.
2. Press DOWN to access the list of available titles.
3. Navigate through the list using the LEFT and RIGHT arrow buttons.
4. Press ENTER to select a title.

Provided the selected title is connected to a signal, the projection should begin immediately.

Selecting a test pattern

1. Navigate to the **TEST Pattern** title on the list.
2. Press DOWN to access the list of test patterns.
3. Press ENTER to select a test pattern.

The selected test pattern should appear on the screen immediately.

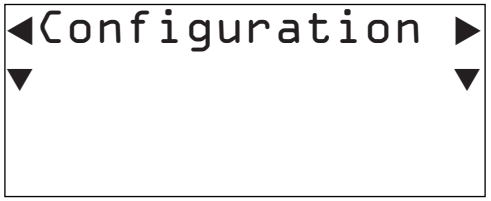
Notes

If the title you want to display is assigned a preset button, you can skip the procedure on this page by simply pressing the preset button.

Up to 16 presets can be assigned on the projector. Presets 1 to 8 are recalled by pressing the corresponding preset button. To recall preset 9 to 16, press and hold the UP arrow button, then press the corresponding number button. If, for example, the preset you wish to recall is 9, the corresponding keypad combination is UP + 1. For preset 10, the combination is UP + 2, etc.

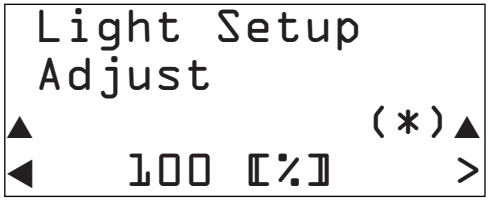
Configuration menu

Press **DOWN** to access various projector settings.



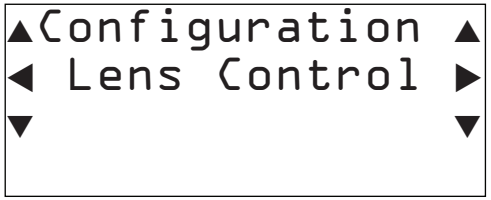
Light Setup

Use this menu to adjust the light output.

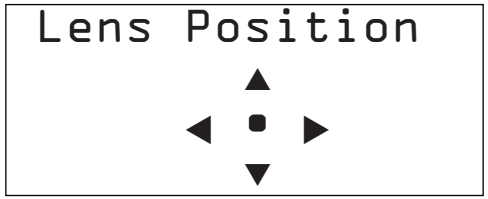


Lens Control

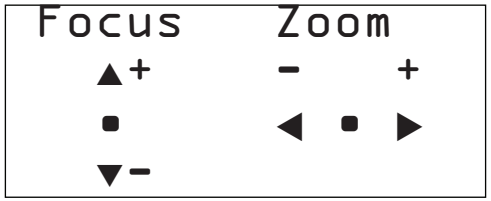
Lens controls are accessed in two modes - **Lens Position** and **Focus Zoom**. Press **ENTER** to switch between the two modes.



- In **Lens Position** mode, use the arrow buttons to shift the lens in the desired direction.



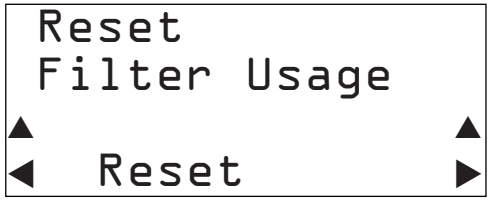
- In **Focus Zoom** mode, use:
  - **UP** and **DOWN** to change the focus,
  - **LEFT** and **RIGHT** to change the zoom.



Reset

This is used to reset the air filter usage time.

Press the ENTER button, then select **Yes** in the displayed confirmation screen, and then press the ENTER button to reset the air filter usage time.



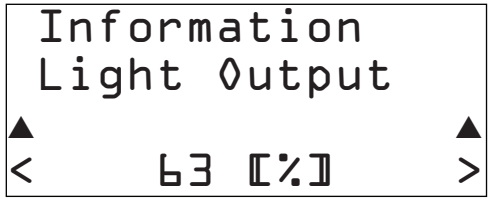
Notes

Information menu

Displays information relating to the light source, the usage time of the projector, the version information and error codes.

Light Output

Displays the value of the Light Output setting as percentage of the maximum light source output.



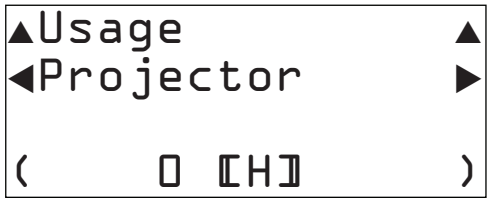
Preset Button

Shows the titles assigned to the sixteen presets stored in the projector's memory.

Usage

Displays information related to the projector usage, such as the usage time of the projector, light source, air filters, and fan, and information about the light source replacement cycle.

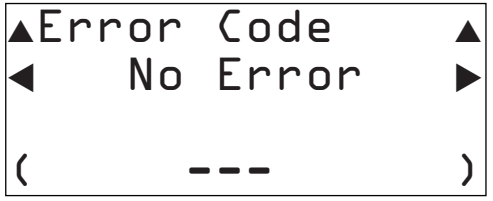
Projector	Displays the usage time of the projector.
Filter	Displays the usage time of the air filters.
Filter Cleaning	Displays the time elapsed since the previous filter cleaning.
Fan	Displays the usage time of the fan.
Light	Display of the usage time of the light source and the value that is displayed is the amount of usage time remaining (approximate).
Light Strike	Displays the number of times the light source has been turned on.
Phosphor	Display of the usage time of the phosphor and the value that is displayed is the amount of usage time remaining (approximate).
Diffuser	Display of the usage time of the diffuser and the value that is displayed is the amount of usage time remaining (approximate).
LCS	Display of the usage time of LCS (Liquid Cooling System) and the value that is displayed is the amount of usage time remaining (approximate).
Douser Count	Displays the number of times the douser has been used.



Error Code

Displays the error code when an error occurs.

When multiple errors occur, you can display them by pressing the **LEFT**/**RIGHT** buttons.



Notes

The remaining amount displayed in **Light**/**Phosphor**/**Diffuser**/**LCS** *is calculated from the current usage time with the unused state as 100% and time to replace as 0%.*

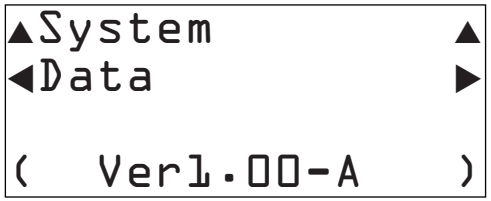
Version

Displays version information about the projector, optional boards, and IMB

System

Displays the version information of the projector.

BIOS	Displays the BIOS version of the projector.
Firmware	Displays the firmware version of the projector.
Data	Displays the data version of the projector.
Serial No.	Displays the serial number of the projector.
Model	Displays the model name of the projector.

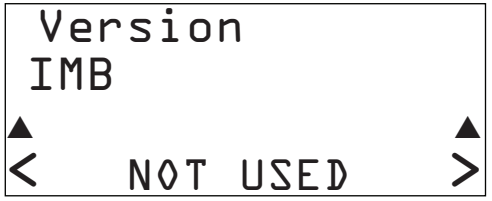


SIB

Displays the model name and version information about the signal input board (SIB). When the projector is in standby mode, the version information displays “---”.

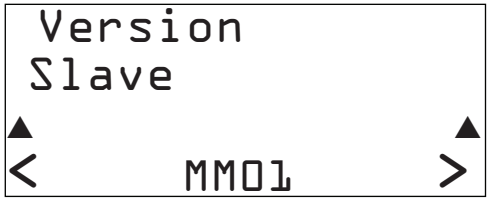
IMB

This item is not available in the current configuration.



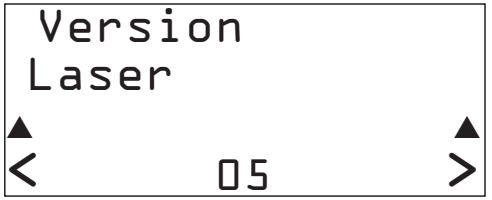
Slave

Displays the slave firmware version of the projector.



Laser

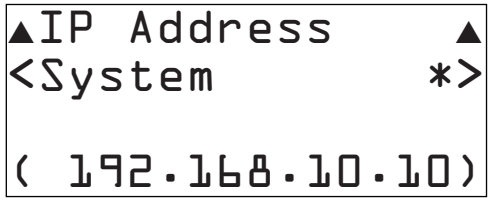
Displays the laser light source firmware version of the projector.



Notes

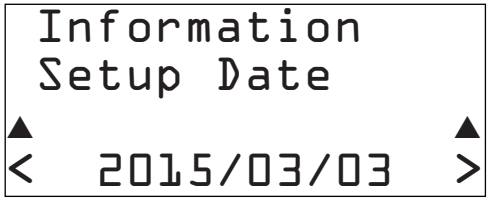
IP Address

Displays the IP address set up in the projector.



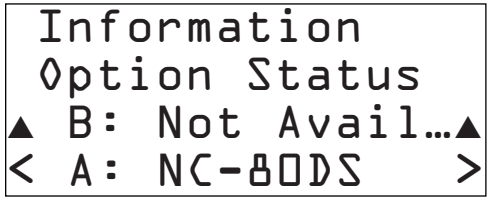
Setup Date

Displays the date when the projector was set up (the starting date of the warranty period).



Option Status

Displays the link status of the device mounted in slot A (media block, signal input board) on the projector. The device name is displayed in ( ) when the projector is in standby or when connection to the device cannot be confirmed.



B	Not Available: Slot B is not available in this projector.
A	Displays the link status of the device in slot A. • NC-80DS: Signal input board (NC-DS03) • No Board: No device mounted

Notes

The projector has a default IP address. Access the IP Address page to connect the IP address of the projector to your network. You can later change the IP address using a special software application.

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NEC

Projector

PH1201QL

Reference Guide

Model No. NP-PH1201QL

IN THIS GUIDE

The DMD™ 55

Choosing A Lens 57

Screen Requirements 58

Fitting the image to the DMD™ 58

Diagonal screen sizes 59

Fitting the image to the screen 60

Positioning the screen and projector 61

Positioning The Image 62

Aspect Ratios Explained 64

Appendix A: Lens Part Numbers 65

Appendix B: Supported Signal Input Modes 66

Supported 4K signals - Option board 66

Screen allocation of Option board input signals 67

Appendix C: Menu Map 68

TITLE SELECT 68

CONFIGURATION 68

(TITLE SETUP) 68

INFORMATION 69

Appendix D: Wiring Details 70

Signal inputs - option board 70

DVI 70

3G-SDI In 71

Control connections 72

LAN 72

RS232 72

3D Sync IN and 3D Sync OUT 72

Technical Specifications 73

Models 73

Inputs and outputs 74

Bandwidth 74

Remote control and keypad 74

Automation control 74

Color temperature 74

Lenses 75

Lens mount 75

Mechanical mounting 75

Orientation 75

Electrical and physical specifications 76

Safety & EMC regulations 76

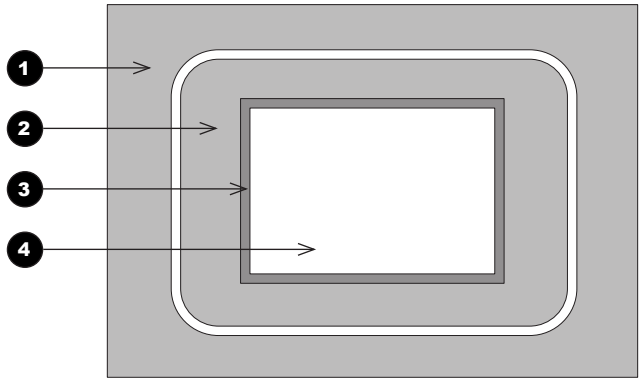
CAD drawings 77

NEC Contacts 78

The DMD™

A DMD™ (Digital Micromirror Device™) is a true digital light modulator which utilises an array of approximately 8.8 million moving aluminium mirrors, with each one representing a pixel in the final projected image. The outermost micromirrors in the array remain inactive (***pond of mirrors***) and are not used in constructing the image.

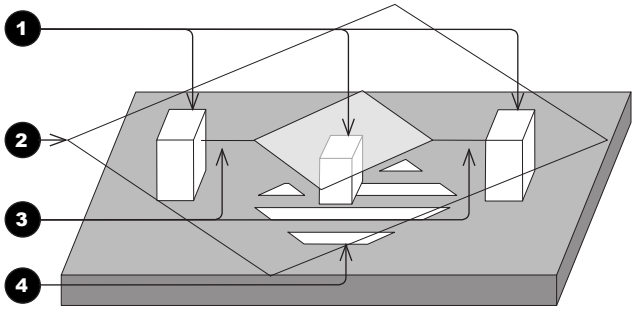
1. **Casing**
2. **Light shield**
3. **Pond of mirrors**
4. **Array**



DMD™

Each mirror element is suspended over address electrodes by a torsion hinge between two posts.

1. **Support posts**
2. **Mirror element**
3. **Torsion hinges**
4. **Offset address electrode**

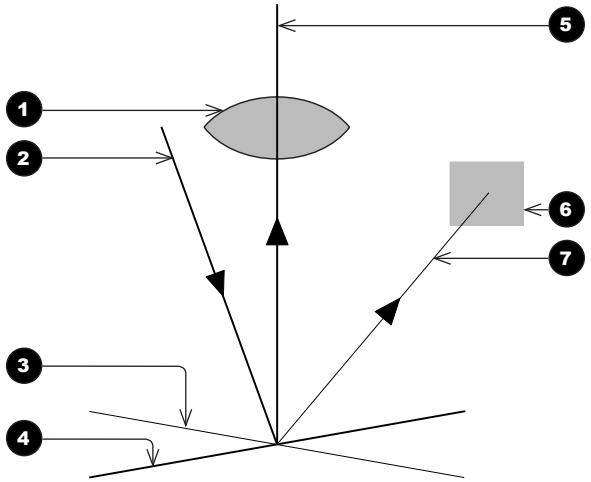


Mirror element with tilt mechanism

Notes

Depending on the voltage polarity applied, each mirror will either tilt to the left to produce a bright pixel or to the right for a dark pixel. When light is applied to the complete DMD™, only the light redirected from a mirror tilting to the left is projected.

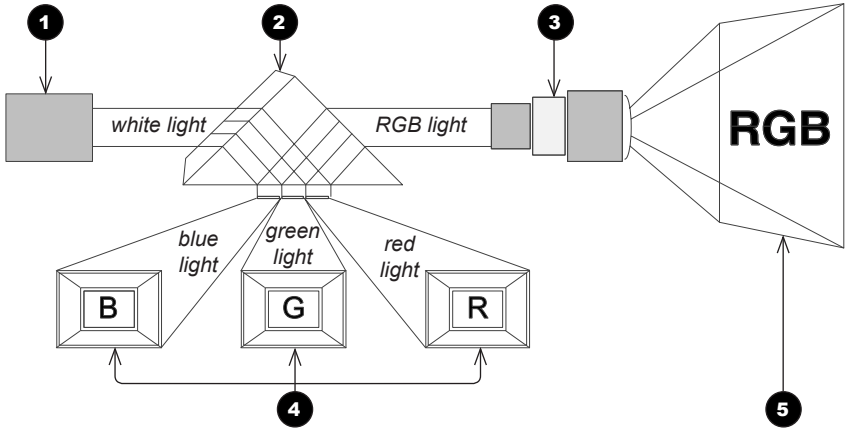
1. **Projection lens**
2. **Incoming light from the illumination module**
3. **Mirror element tilted to the right**
4. **Mirror element tilted to the left**
5. **Reflected light, left tilt**
6. **Light dump**
7. **Reflected light, right tilt**



Light flow

The projector optically filters white light from the illumination module into its constituent red, green and blue. Each color illuminates a separate DMD™ whose modulated output is then recombined with the other two to form the projected full color image.

1. **Illumination module**
2. **Optical filtering of light into red, green and blue**
3. **Projection lens**
4. **DMD™ devices**
5. **Full color image displayed on screen**



Filtering process

Notes

Choosing A Lens

A number of lenses are available. Which lens you choose depends on the screen size, image aspect ratio, throw distance and light output.

The following table shows all available lenses in order of their ***throw ratios***:

Throw ratios	Lens extension
0.91 : 1 Fixed lens	278 mm
1.13 - 1.66 : 1 zoom lens	270 mm
1.30 - 1.85 : 1 zoom lens	225 mm
1.45 - 2.17 : 1 zoom lens	222 mm
1.63 - 2.71 : 1 zoom lens	134 mm
1.95 - 3.26 : 1 zoom lens	137 mm
2.71 - 3.89 : 1 zoom lens	190 mm
3.7 - 5.3 : 1 zoom lens	262 mm
4.8 - 7.4 : 1 zoom lens	308 mm

Notes

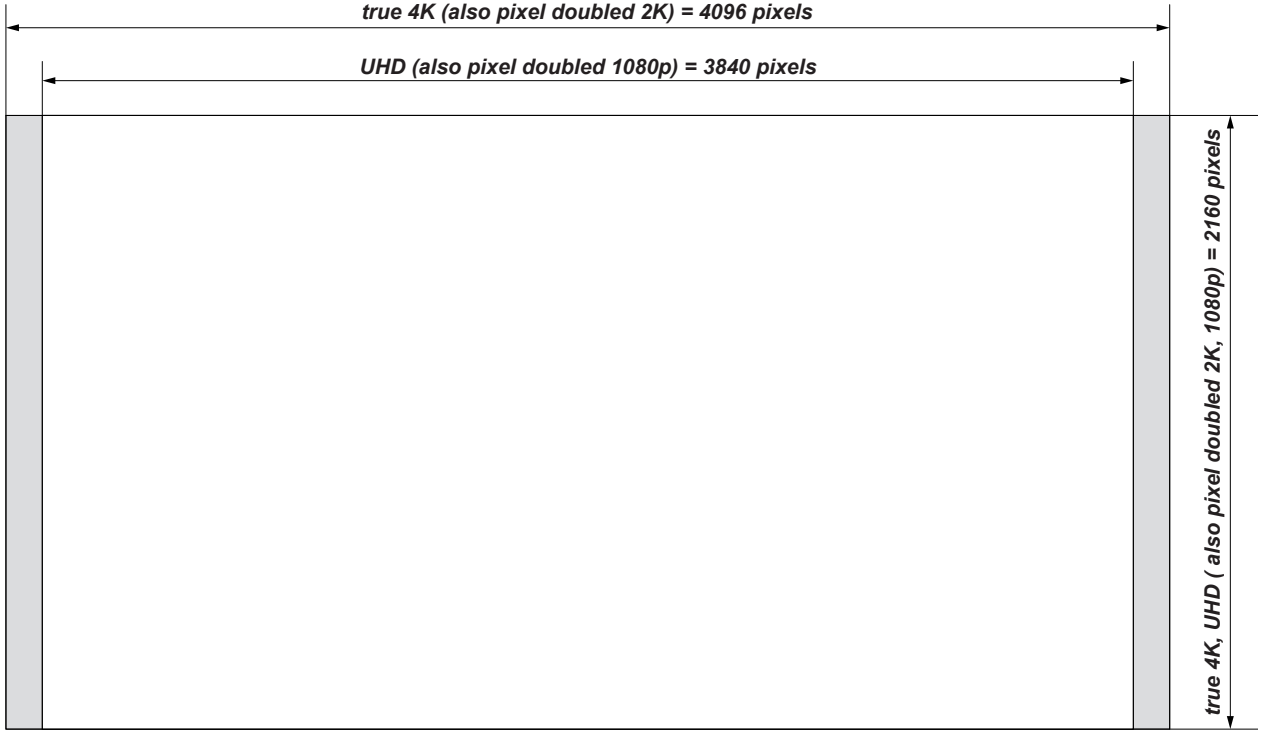
For information about individual lens part numbers, see ***Appendix A*** *at the end of this document.*

Screen Requirements

Fitting the image to the DMD™

The projector supports 4K and Ultra HD formats and is able to achieve 2K and 1080p via frame doubling.

2K and frame doubled 1080p will not utilize the full width of the DMD™, resulting in pillarboxing, as shown in the illustration.



Notes

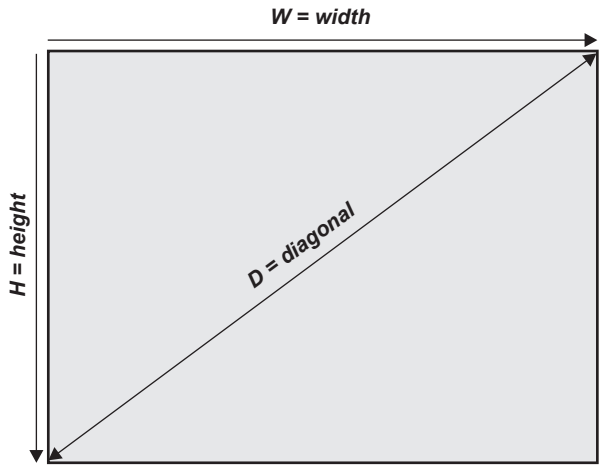
Diagonal screen sizes

Screen sizes are sometimes specified by their diagonal size (D). When dealing with large screens and projection distances at different aspect ratios, it is more convenient to measure screen width (W) and height (H).

The example calculations below show how to convert diagonal sizes into width and height, at various aspect ratios.

TRUE 4K (approximately 1.9 : 1)
W = D x 0.88 ***H*** = D x 0.47

UHD (approximately 1.78 : 1)
W = D x 0.87 ***H*** = D x 0.49



Notes

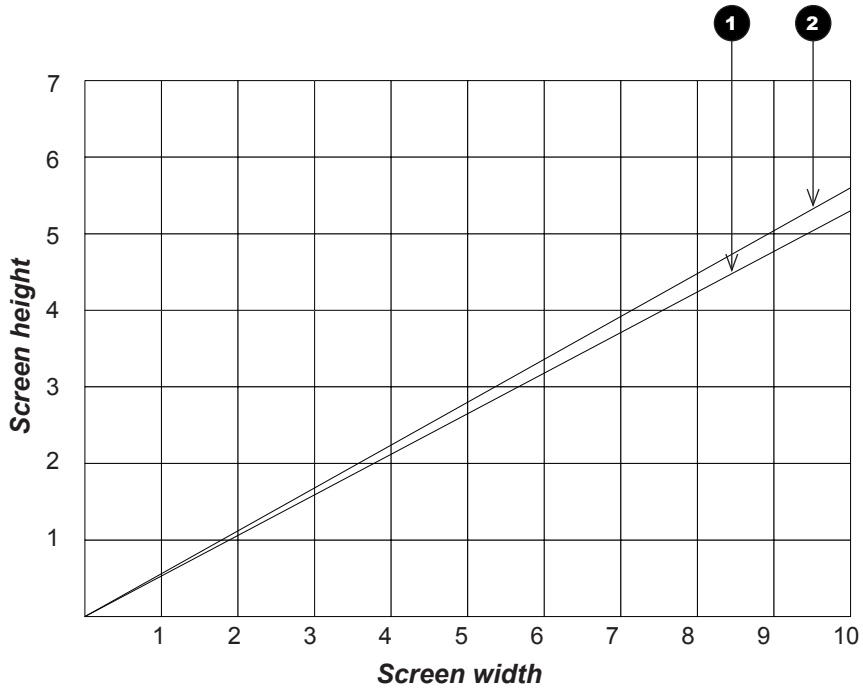
Fitting the image to the screen

It is important that your screen is of sufficient height and width to display images at all the aspect ratios you are planning to use.

Use the conversion chart to check that you are able to display the full image on your screen. If you have insufficient height or width, you will have to reduce the overall image size in order to display the full image on your screen.

3 **4K / 2K (1.9:1)**
W = H x 1.9, H = W x 0.53

4 **UHD / 1080p (16:9 = 1.78:1)**
W = H x 1.78, H = W x 0.56

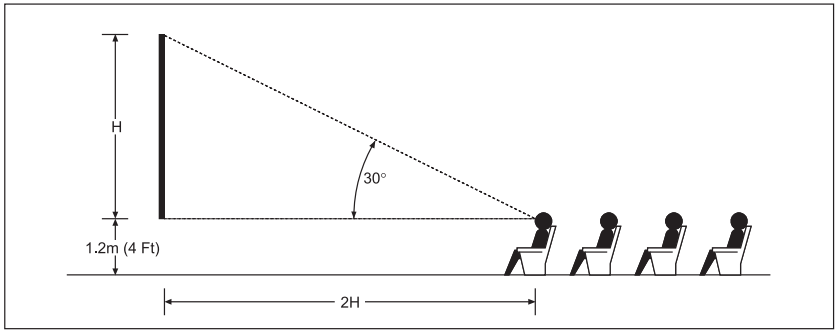


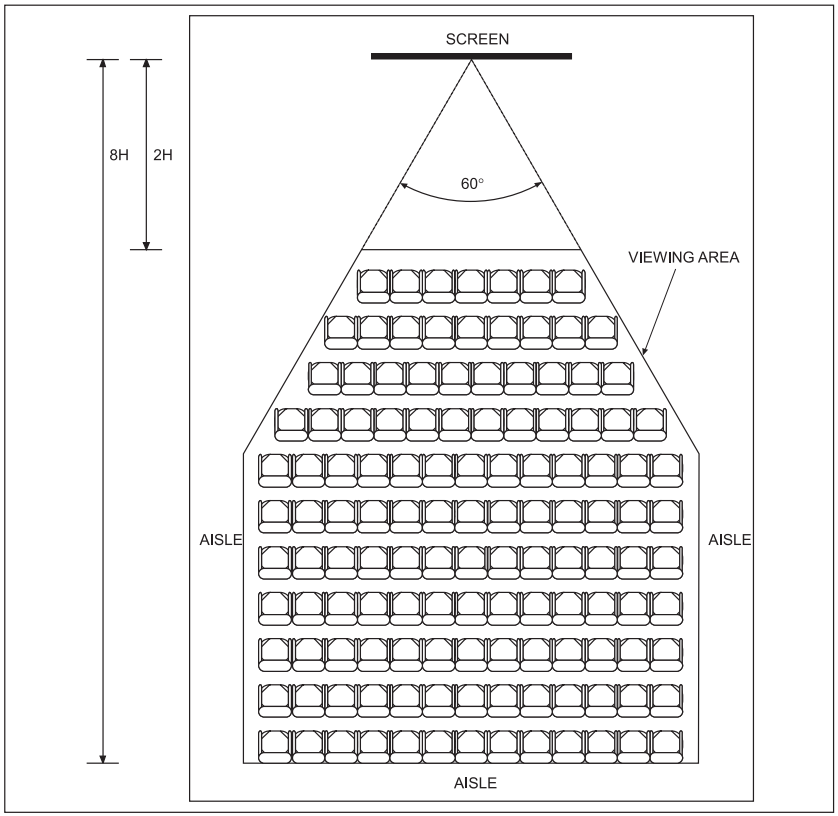
Notes

Positioning the screen and projector

For optimum viewing, the screen should be a flat surface perpendicular to the floor. The bottom of the screen should be 1.2 m (4 feet) above the floor and the front row of the audience should not have to look up more than 30° to see the top of the screen.

The distance between the front row of the audience and the screen should be at least twice the screen height and the distance between the back row and the screen should be a maximum of 8 times the screen height. The screen viewing area should be within a 60° range from the face of the screen.





Notes

The projector should be installed as close to the power outlet as possible.

The power connection should be easily accessible, so that it can be disconnected in an emergency.

Ensure that there is at least 30 cm (12 in) of space between the ventilation outlets and any wall, and 10 cm (4 in) on all other sides.

Do not install the projector close to anything that might be affected by its operational heat, for instance, polystyrene ceiling tiles, curtains etc.

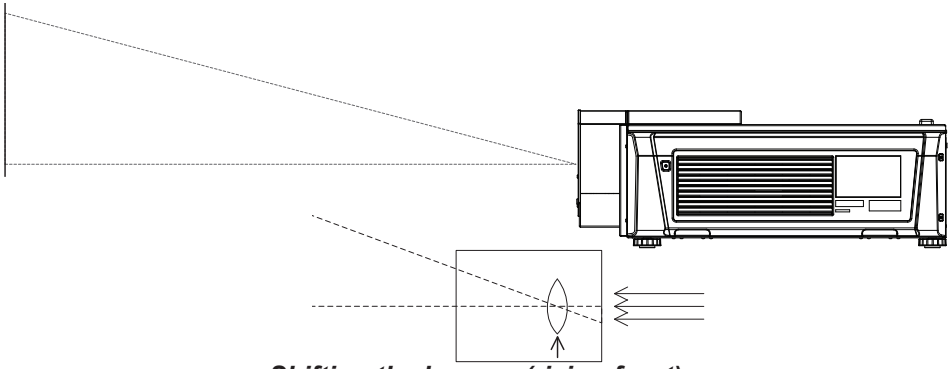
The image can be flipped for rear projection and displayed without the need for extra mirrors or equipment.

However, you must ensure that there is sufficient distance behind the screen for the projector to be correctly located.

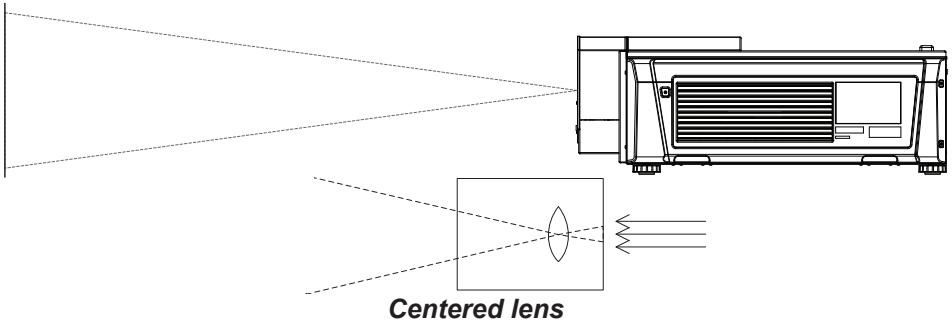
Rear installation is generally more complicated and advice should be sought from your local dealer before attempting it.

Positioning The Image

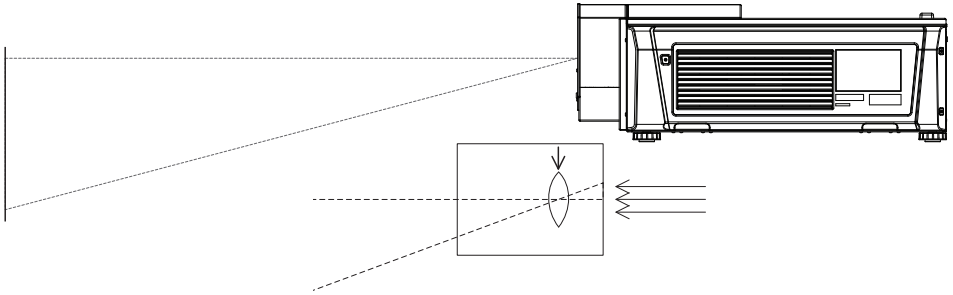
The normal position for the projector is at the centre of the screen. However, you can set the projector above or below the centre, or to one side, and adjust the image using the **Lens shift** feature (known as ***rising and falling front***) to maintain a geometrically correct image.



Shifting the lens up (rising front)



Centered lens



Shifting the lens down (falling front)

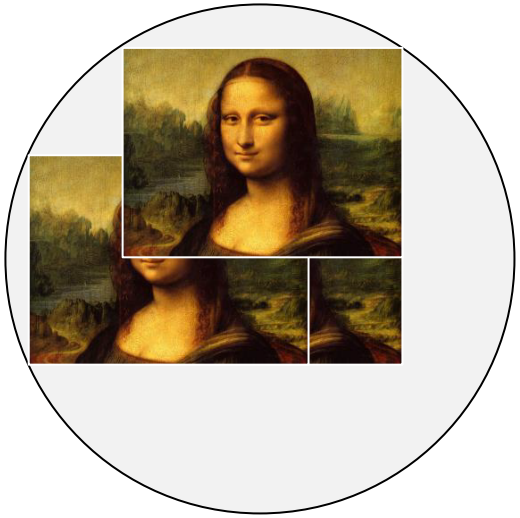
Notes

*For more information on shifting the lens, see **Lens control** in the **Operating Guide**.*

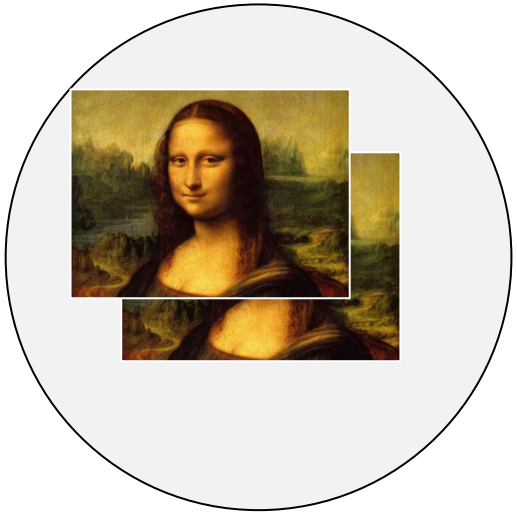
Whenever possible, position the projector so that the lens is centered for the highest quality image.

Any single adjustment outside the ranges specified on the following page may result in an unacceptable level of distortion, particularly at the corners of the image, due to the image passing through the periphery of the lens optics.

If the lens is to be shifted in two directions combined, the maximum range without distortion will be somewhat less, as can be seen in the illustrations below.



Full horizontal or vertical shift



Combined shift is reduced

Notes

*For more information on shifting the lens, see **Lens control** in the **Operating Guide**.*

Aspect Ratios Explained

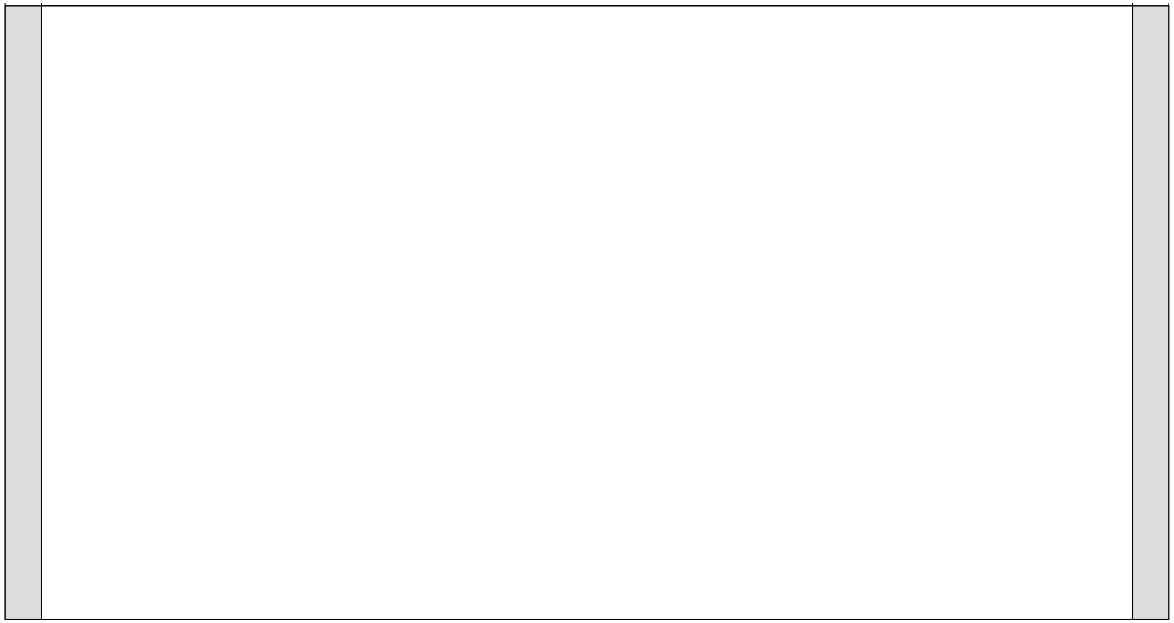
The appearance of a projected image on the screen depends on:

the DMD™ resolution, which is **4K** with a 4096 x 2160 resolution, corresponding to an aspect ratio of 256:135, or approximately 1.9:1.

the aspect ratio of the input signal, which is **1.9:1** for 4K and 2K images, or **1.78:1** for UHD or 1080p images.

2K and 1080p are automatically scaled by the projector to fill the height of the DMD™.

The 4K and 2K resolutions have a slightly wider aspect ratio. UHD and scaled 1080p do not fill the width of the DMD™, so they appear centered, with pillarboxing at the sides, as shown in the illustration.



Pillarboxing on UHD and 1080p images

Notes

Appendix A: Lens Part Numbers

Lens name	Part number	Throw ratios	Lens extension
L2K-10F1	1160360	0.91 : 1 Fixed lens	278 mm
NC-50LS12Z	01165191	1.13 - 1.66 : 1 zoom lens	270 mm
NC-50LS14Z	01165165	1.30 - 1.85 : 1 zoom lens	225 mm
NC-50LS16Z	01165163	1.45 - 2.17 : 1 zoom lens	222 mm
NC-50LS18Z	01165164	1.63 - 2.71 : 1 zoom lens	134 mm
NC-50LS21Z	01165166	1.95 - 3.26 : 1 zoom lens	137 mm
L2K-30ZM	01165070	2.71 - 3.89 : 1 zoom lens	190 mm
L2K-43ZM1	01160361	3.7 - 5.3 : 1 zoom lens	262 mm
L2K-55ZM1	01160362	4.8 - 7.4 : 1 zoom lens	308 mm

Notes

Appendix B: Supported Signal Input Modes

Supported 4K signals - Option board

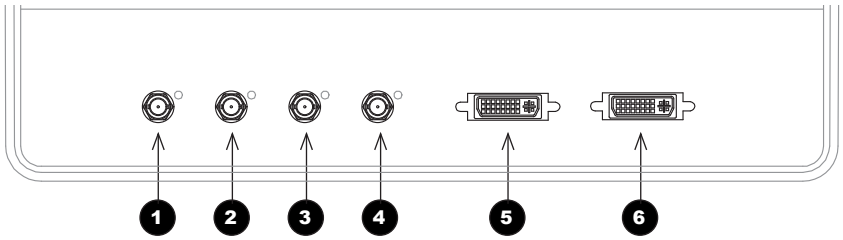
					V Frequency				
					24	25	30	50	60
HD-SDI Quad	3840x2160 (1920x1080 4port)	p	YCbC r4:2:2	10 bit	✓	✓	✓		
		P sF	YCbC r4:2:2	10 bit	✓	✓	✓		
	4096x2160 (1920x1080 4port)	p	YCbC r4:2:2	10 bit	✓	✓	✓		
3G-SDI Quad	3840x2160 (1920x1080 4port)	p	RGB/YCbC r4:4:4	10/12 bit	✓	✓	✓	✓	✓
	4096x2160 (1920x1080 4port)	p	RGB/YCbC r4:4:4	10/12 bit	✓	✓	✓	✓	✓
DVI Twin	3840x2160 (1920x1080 4port)	p	RGB	8 bit	✓	✓	✓		
		P sF							
	4096x2160 (1920x1080 4port)	p			✓	✓	✓		
		P sF							

Notes

3G-SDI is Level A only.

Screen allocation of Option board input signals

1. **3G-SDI A**
2. **3G-SDI B**
3. **3G-SDI C**
4. **3G-SDI D**
5. **DVI A**
6. **DVI B**



		3840		*4096*	
SDI Quad	*2160*	SDI A: 1920 x 1080	SDI B: 1920 x 1080	*2160*	SDI A: 2048 x 1080	SDI B: 2048 x 1080
		SDI C: 1920 x 1080	SDI D: 1920 x 1080		SDI C: 2048 x 1080	SDI D: 2048 x 1080

		3840		*4096*	
DVI Twin	2160	DVI A: 1920 x 2160	DVI B: 1920 x 2160	2160	DVI A: 2048 x 2160	DVI B: 2048 x 2160

Notes

Appendix C: Menu Map

Menu	Sub Menus	Description
TITLE SELECT		
	Title Memory Name	Selects the title of the signal to be projected.
	Test Pattern	Selects a test pattern to be projected.
CONFIGURATION		
	Light Setup	
	Adjust	Adjusts the light source brightness (output).
	Lens Control	
	Lens Position	Adjusts the position of the projected image.
	Focus Zoom	Adjusts the size and focus of the projected image.
	Reset	
	(Factory Default)	Returns the settings to their default values. Selects between preset buttons and titles only, LAN settings and all settings.
	Filter Usage	Initializes the usage time of the air filter.
	Filter Cleaning	Initializes the filter cleaning time.
	(Fan Usage)	Initializes the usage time of the fan.
	(Light Usage)	Initializes the usage time of the light source.
	(Phosphor)	Initializes the usage time of the phosphor.
	(Diffuser)	Initializes the usage time of the diffuser.
	(LCS)	Initializes the usage time of the liquid cooling system.
	(Douser Count)	Resets the number of times the douser has been used.
	(Setup)	This menu is inaccessible from the control panel.
	(Installation)	
	(Memory)	
(TITLE SETUP)		

Notes

Some of the information in this menu map is summarised. See the actual menu on the projector for full details.

Menus and menu items displayed in parentheses cannot be accessed from the control panel.

To access such items, you need to connect the projector to a computer running a specially designed application. The software will require special login credentials.

Menu	*Sub Menus*	*Description*
INFORMATION		
	Light Output	Displays the light source output setting.
	Lens Type	Displays the lens type setting.
	Preset Button	
	Preset Button 1 - 16	Displays the titles assigned to the preset buttons (<1> to <8>).
	Usage	Displays information related to projector usage.
	Error Code	Displays any currently occurring error.
	Version	
	System	Displays model name and version information about the projector.
	SIB	Displays model and version of the signal input board (SIB).
	Slave	Displays the slave firmware version of the projector.
	Laser	Displays the laser light source firmware version of the projector.
	IP Address	
	System	Displays the IP address of the projector.
	Setup Date	Displays the date when the projector was set up (starting date of the warranty period).
	Option Status	Displays the link status of the device mounted in slot A and projector

Notes

Some of the information in this menu map is summarised. See the actual menu on the projector for full details.

Menus and menu items displayed in parentheses can only be accessed by service personnel.

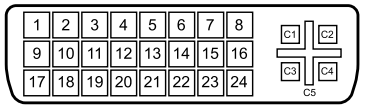
Appendix D: Wiring Details

Signal inputs - option board

DVI

24 way D-type connector

Pin 1	TMDS data 2−	Digital red− (link 1)
Pin 2	TMDS data 2+	Digital red+ (link 1)
Pin 3	TMDS data 2/4 shield	
Pin 4	TMDS data 4−	Digital green− (link 2)
Pin 5	TMDS data 4+	Digital green+ (link 2)
Pin 6	DDC clock	
Pin 7	DDC data	
Pin 8	Analog vertical sync	
Pin 9	TMDS data 1−	Digital green− (link 1)
Pin 10	TMDS data 1+	Digital green+ (link 1)
Pin 11	TMDS data 1/3 shield	
Pin 12	TMDS data 3-	Digital blue− (link 2)
Pin 13	TMDS data 3+	Digital blue+ (link 2)
Pin 14	+5 V	Power for monitor when in standby
Pin 15	Ground	Return for pin 14 and analog sync
Pin 16	Hot plug detect	
Pin 17	TMDS data 0−	Digital blue− (link 1) and digital sync
Pin 18	TMDS data 0+	Digital blue+ (link 1) and digital sync
Pin 19	TMDS data 0/5 shield	
Pin 20	TMDS data 5−	Digital red− (link 2)
Pin 21	TMDS data 5+	Digital red+ (link 2)
Pin 22	TMDS clock shield	
Pin 23	TMDS clock+	Digital clock+ (links 1 and 2)
Pin 24	TMDS clock−	Digital clock− (links 1 and 2)
C1	Analog red	
C2	Analog green	
C3	Analog blue	
C4	Analog horizontal sync	
C5	Analog ground	Return for R, G, and B signals



DVI: pin view of female connector

Notes

The default hardware configuration does not include an option board, which can be ordered separately.

High-bandwidth Digital Content Protection (HDCP) is supported on this input.

3G-SDI In

75 ohm BNC

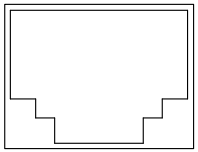
3G-SDI connector

Notes

Control connections

LAN

RJ45 socket

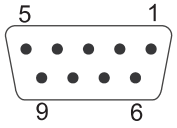


Update port

RS232

9 way D-type connector

Pin No.	RS-232C Signal Name	Functions as RS-232C	Projector Connector Operation
1	CD	Carrier detection	Not used (N.C.)
2	RXD	Reception data	Data transmission to an external device
3	TXD	Transmission data	Data reception from an external device
4	DTR	Data Terminal ready (Note)	Connection to 6 pins
5	GND	Signal GND	Signal GND
6	DSR	Data set ready (Note)	Connection to 4 pins
7	RTS	Transmission request	SYSTEM: Hi-Z (Not used) CINEMA: Hi-Z (Used)
8	CTS	Transmission available	SYSTEM: Fixed at -6.5 V (Not used) CINEMA: ±10.5 V (Used: Depends on communication status)
9	RI	Ring indicator	Not used (N.C.)



RS232:
pin view of female connector

3D Sync IN and 3D Sync OUT

75 ohm BNC

pin view of female connector

Notes

Only one remote connection (RS232 or LAN) should be used at any one time.

Technical Specifications

Digital Projection reserves the right to change product specifications without prior notice.

Models

The specifications on these pages refer to the following projector:

Series name
NP-PH1201QL

Color system: 3-chip DLP®

Display type: 3 x 1.38” DarkChip™ DMD™

DMD™ specification (native): 4096 x 2160 pixels, +/- 12° tilt angle

Fast transit pixels for smooth grayscale and improved contrast.

Notes

Inputs and outputs

Type	Connector	Qty
Video & Computer		
3G-SDI	BNC	4
DVI-D	DVI-D	2
Communication & Control		
3D Sync Out	BNC	1
3D Sync In	BNC	1
LAN	RJ45	1
RS232	9-pin D-Sub	1
Wired Remote In	3.5 mm Stereo Jack	1
Service Port	USB Type A	1

Bandwidth

N/A

Remote control and keypad

- PC control
- On-board keypad with LCD screen

Automation control

- RS232
- LAN

Color temperature

- User selectable via TCGD

Notes

The default hardware configuration does not include an option board, which can be ordered separately.

3G-SDI signals are very high speed digital signals which require better quality coaxial cable than conventional analogue video. The data rate is 3 Gigabits per second.

In choosing cable length and connectors for any installation the frequency response loss in decibels should be proportional to √f, from 1 MHz, to 3 GHz.

Lenses

Detailed information about available lenses can be found in ***Appendix A: Lens Part Numbers***.

Lens mount

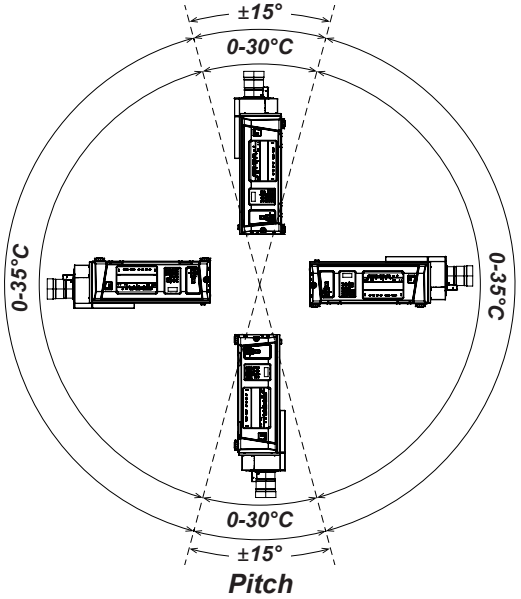
- Motorised shift, zoom and focus. Intelligent Lens Memory with user-definable preset positions.

Mechanical mounting

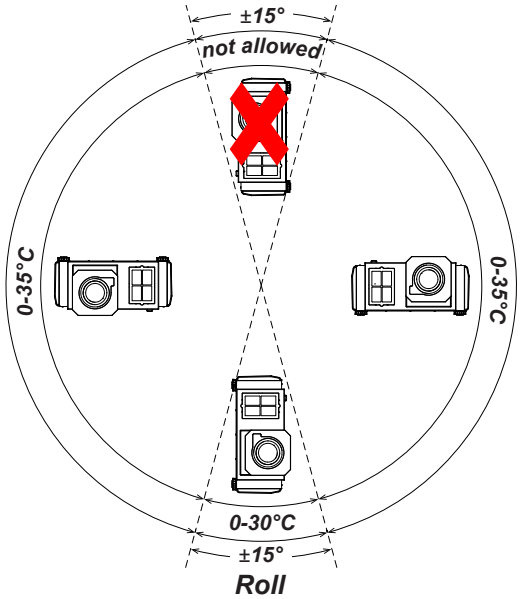
- Front/Rear Table
- Front/Rear Ceiling
- Adjustable Front/Rear Feet

Orientation

- **Table Top or Inverted:**
  Yes
- **Pointing Up:**
  Yes, with operating temperature 0-30°C
- **Pointing Down:**
  Yes, with operating temperature 0-30°C
- **Roll (Portrait):**
  Yes, with inputs pointing upward only and with operating temperature 0-30°C



Pitch



Roll

Notes

Information on lenses in this guide:

- ***Appendix A: Lens Part Numbers*** *- detailed descriptions of available lenses.*

Electrical and physical specifications

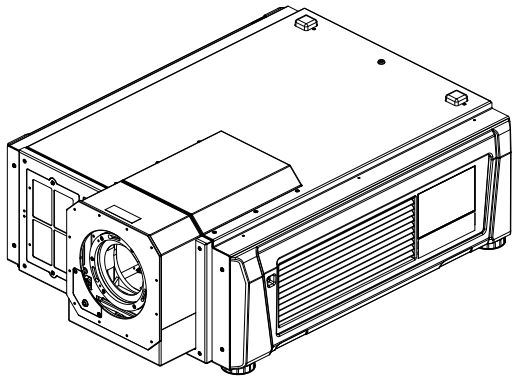
- **Power requirements** 200-240 VAC, 50-60 Hz (single phase)
- **Power Consumption** 1600 W
- **Thermal Dissipation** 5027 BTU/hr
- **Fan Noise** 48 dBA
- **Operating Temperature** 0°C to 35°C (32 to 95F)
- **Operating Temperature (Portrait Mode)** 0°C to 30°C (32 to 86F)
- **Storage Temperature** -10°C to 50°C (14 to 122F)
- **Operating Humidity** 20% to 80% non-condensing
- **Weight** 67 kg (148 lb)
- **Dimensions** H: 32.5 cm W: 70 cm L: 93.5 cm
  H: 12.8 in W: 27.56 in L: 36.8 in

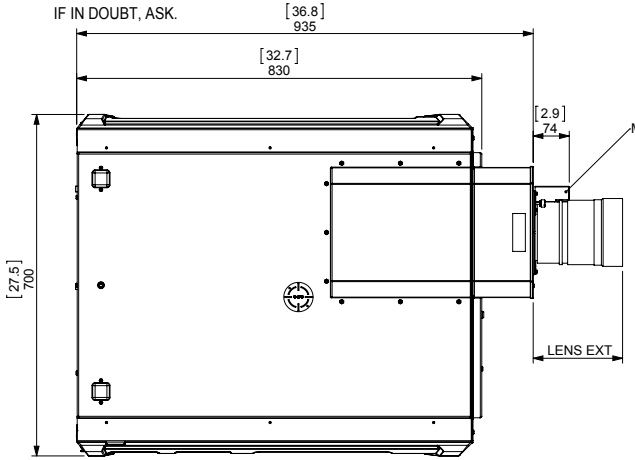
Safety & EMC regulations

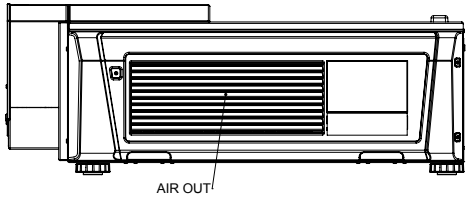
- CE, FCC Class A, UL

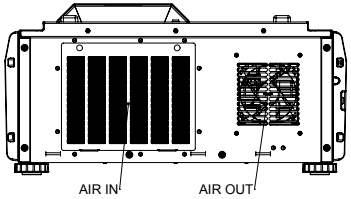
Notes

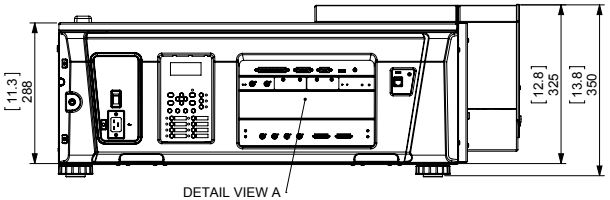
CAD drawings

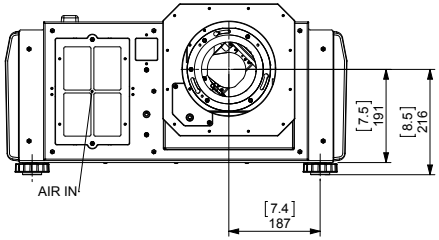


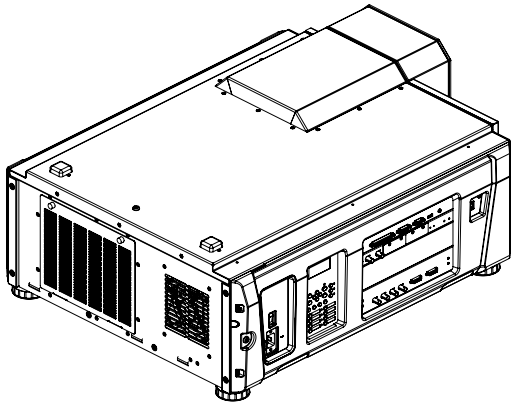


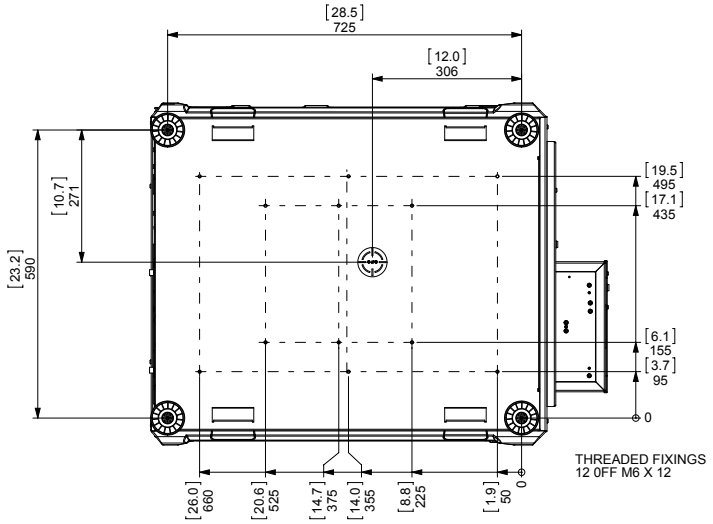


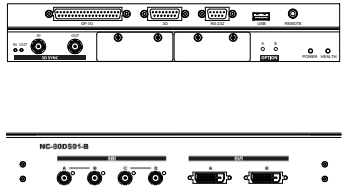












DETAIL VIEW A (1 : 2)

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Notes

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